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ABSTRACT

This report of the Preschool Evaluation Project provides developmental profiles of handicapped children who attended preschool special education programs in Montgomery County Public Schools (Maryland), and estimates how effective these programs were in accelerating the development of children with various types of handicaps. The developmental skills of 646 children (aged 0-5) placed in special education were assessed at the time of placement and at the end of each school year, using the Battelle Developmental Inventory. Five major handicap groups were analyzed separately, including: language impairments, multiple handicaps, speech impairments, hearing impairments, and vision impairments. Results showed significant benefits to children receiving preschool special education services. Services appeared to produce greater benefits when they reached the children at younger ages, particularly for the multihandicapped. Parents' satisfaction with the preschool services was also assessed. Data are displayed on numerous figures and tables, and four appendixes explain the data collection procedures, present the study instruments, and provide an explanation of the value-added analysis technique used for this study. (JDD)

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MONTGOMERY COUNTY
PUBLIC SCHOOLS
ROCKVILLE, MARYLAND

A Longitudinal Study of Children in Preschool Special Education Programs

February 1988

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MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

A LONGITUDINAL STUDY OF CHILDREN IN PRESCHOOL SPECIAL EDUCATION PROGRAMS

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EXECUTIVE SUMMARY

BACKGROUND

Early childhood special education enjoys widespread professional support and has received federal dollars for nearly 20 years, yet research findings on the effectiveness of early education for the handicapped remain equivocal. The Preschool Evaluation Project discussed here advances information in this area by providing parents, teachers, and policy planners with developmental profiles of handicapped children who were in preschool special education programs. In addition, it estimates how effective these programs are in accelerating the development of children with various types of handicaps.

Montgomery County Public Schools (MCPS) received funding from the Maryland State Department of Education (MSDE) from 1980 to 1985 to develop a model for evaluating programs for handicapped preschoolers and to establish a longitudinal database. From October 1985 through September 1987, funding through Cooperative Agreement No. 630937 to MSDE from the U.S. Office of Special Education enabled the continuation of periodic testing and retesting of preschool children identified as handicapped and placed in special education programs. The following major issues were addressed with these data:

EFFECTS ON CHILDREN

What are the short-term program effects of preschool special education on the children's development?

What are the long-term patterns of development of children who received preschool special education?

EFFECTS ON PARENTS AND FAMILIES

How does participation in preschool special education affect the handicapped child's family?

How satisfied are parents with preschool special education services?

METHODS

Measures. Each child's developmental skills were assessed at the time of placement in special education and at the end of each school year using the Battelle Developmental Inventory (BDI). Child responses and parent reports were used to provide scores in the following areas of development:

- Cognitive
- Adaptive
- Personal-social
- Expressive language
- Receptive language
- Gross motor
- Fine motor

Program attendance data and specifics about a child's special services were collected from service providers and centralized computer records at several time points. Questionnaires were used to collect family data at the time of placement and at the end of each school year, and demographic and medical information was obtained through record reviews.

Sample. The goal was to include in the study sample all children between the ages of birth and five years old who were newly identified for placement in special education in Montgomery County between September, 1983, and January, 1986. Virtually all (98 percent) of the 775 preschoolers whose parents were invited to participate in the study were eventually pretested, and ultimately 646 children (83.3 percent of those contacted) were included in the analytic sample. The sample was predominantly boys (66 percent), and almost two-thirds of the sample was between three and five years old at the initial assessment with the BDI. The ethnic composition of the sample was 73 percent white, 20 percent black, 4 percent Hispanic, and 3 percent Asian.

The children exhibited a diverse array of medical problems and developmental profiles at the time of pretest. The five major handicap groups, as determined at the time of placement in special education, are reported in Table E.1. Data from these five groups were analyzed separately because of significant differences in age, developmental level, handicapping condition, and services. Given the importance of these distinctions, these groups will be treated separately in the following discussion. A description of the group and the services the children received are summarized first, then developmental levels and growth rates are discussed, and finally an examination of how these groups responded to their special preschool programs is presented.

TABLE E.1

Primary Handicap Group to Which Pupils
Were Assigned at Placement
[N = 646]

HANDICAP GROUP	n =	% of Sample	Pretest Mean Age (months)
Language	263	40.7	43.1
Multiple	163	25.2	27.2
Speech	142	22.0	47.7
Hearing	30	4.6	35.1
Visual	27	4.2	12.4
Analytic Sample	625*	96.7*	38.5

* 21 children (3.3%) were not assigned to a group at the time of placement.

FINDINGS FOR LANGUAGE-IMPAIRED GROUP

Handicapping conditions and services. These children had developmental delays of six months or more in most areas at the time of placement into special services, but their most salient delays were in their use and understanding of language. Their motor skills were near normal. Just over half of these children in the Language-Impaired group were in a classroom program their first year of services. In addition, most of them received speech and/or language therapy, and a small percentage received occupational and/or physical therapy.

Development rates. Figure E.1 shows the developmental progress of these children compared to the test publisher's age norms in the seven domains measured with the BDI. In these subsequent figures, the dark line shows the scores of the normal sample assessed by the test publisher, and the lighter line charts the growth of the children in this study. (Since groups were combined across the three-year study, the data points for successively later ages are plotted with successively fewer cases.)

These charts show, first of all, that the Language-Impaired group was developmentally delayed in almost all areas at the time of pretest. Over time they were able to develop at a rate comparable to that of the norm group; however, their growth rates appear to diminish slightly as they approach six years of age.

Short-term program effects. The Language-Impaired group showed short-term program benefits in all domains as shown in Figure E.2.

For this chart a technique was used to split the child's pre- posttest gain into two components: maturation alone and the effects of the special education programs.[1] Briefly, since the pretest scores were found to be highly related to age, it could be predicted, based on their age, how much the children in this group could be expected to grow over the pre- posttest interval with no program participation. Each child's growth prediction was compared with the actual posttest score, and it was concluded that the difference, if any, must be due to the special education services. The "maturation estimate" and the "program effect" were then translated into monthly rates of growth, and each of the seven domain scores were standardized so that they could be compared one with another. In addition, the monthly growth rate for the normal sample, estimated from the publisher's norm tables was also plotted.

Figure E.2 shows that the "program effect" for the Language-Impaired group was in several areas almost equal in size to the estimate for the simple growth prediction. (Note particularly the personal-social and

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[1] This technique was used because there was no comparison group of handicapped children receiving no services. Maryland state law requires that services be provided to all handicapped children from birth. Unfortunately, this technique is limited to short-term predictions since projections of, say, two years ahead would introduce too much error for samples in the young age range.

FIGURE E.1A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Language-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

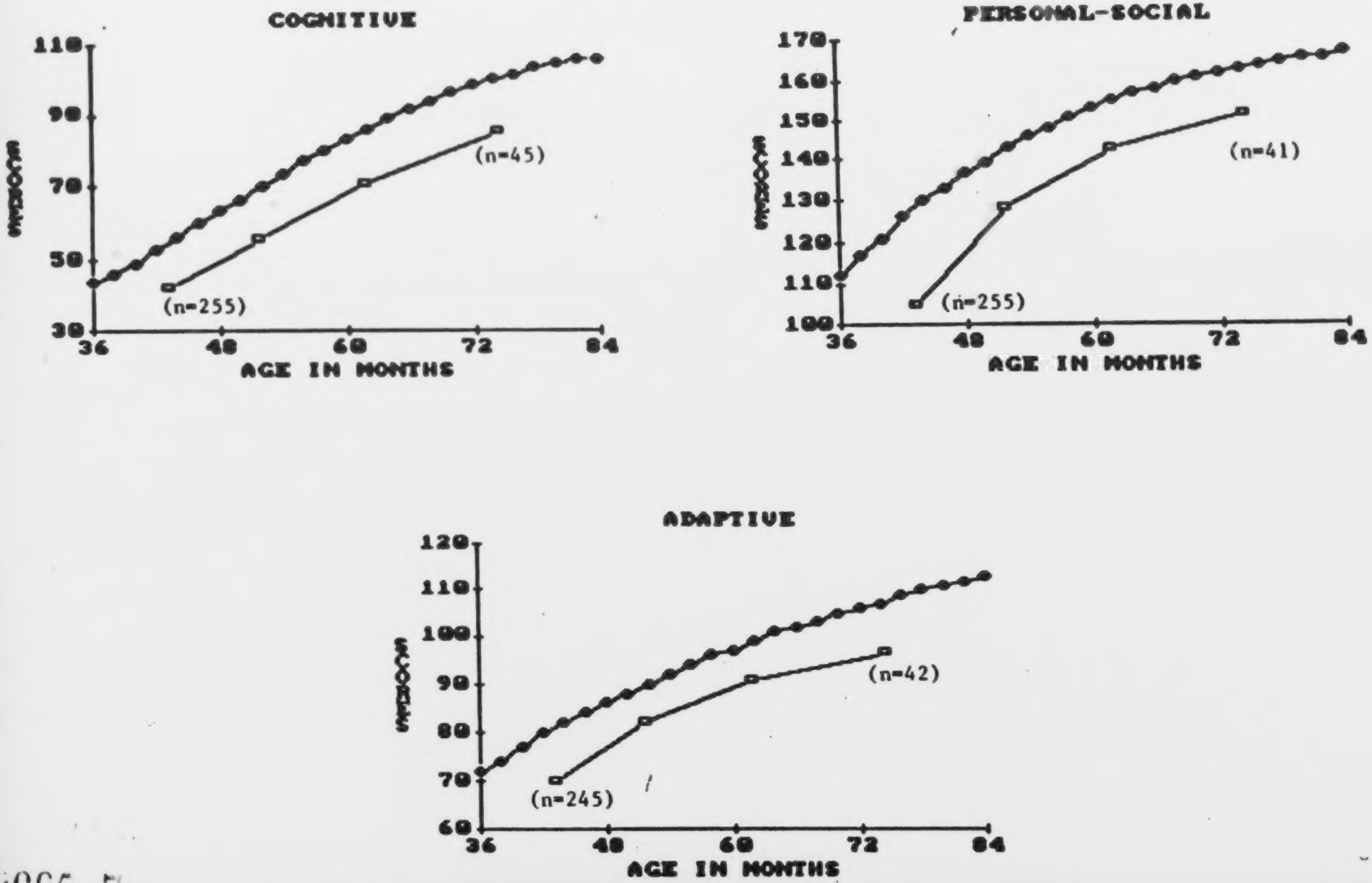
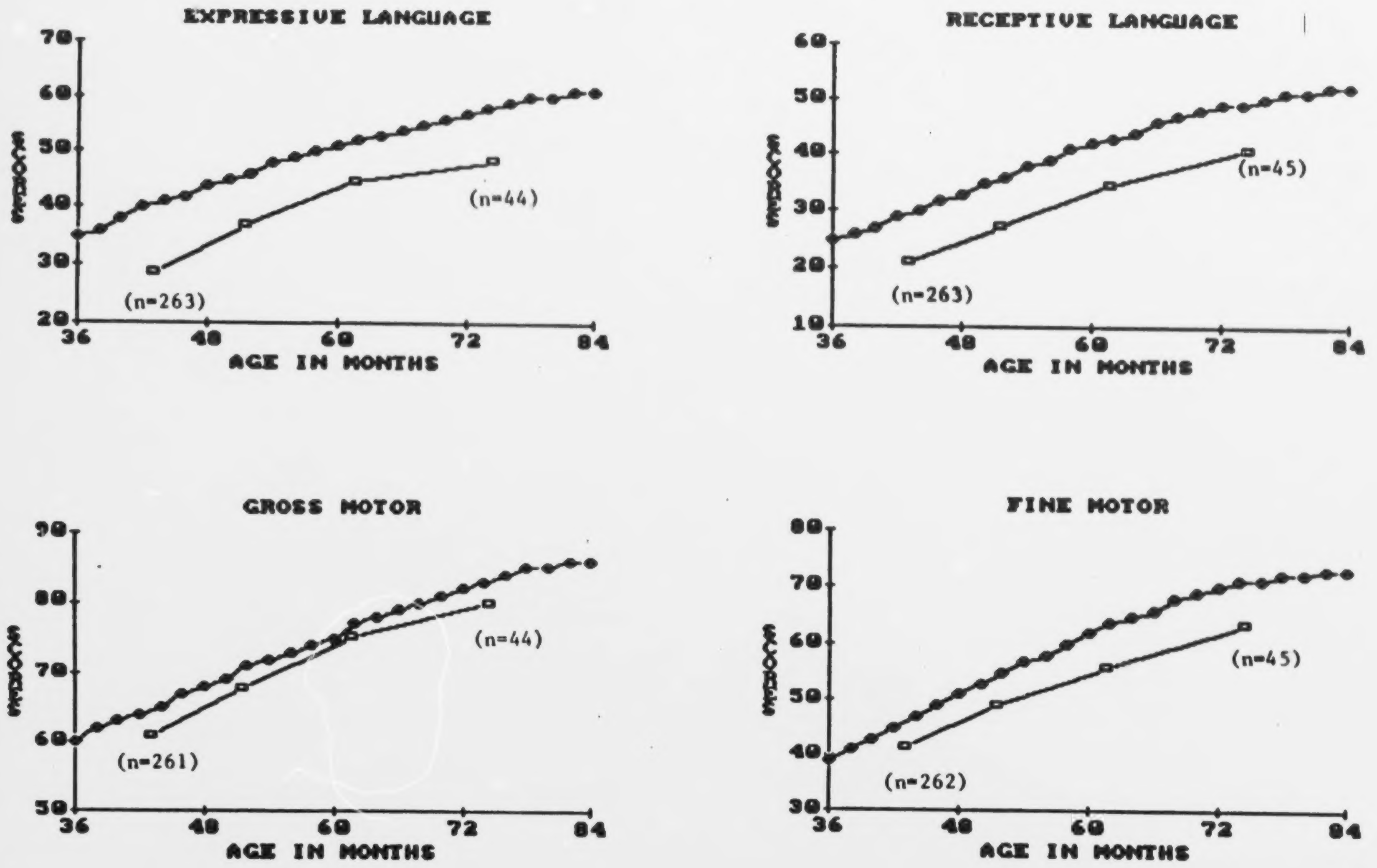


FIGURE E.1B

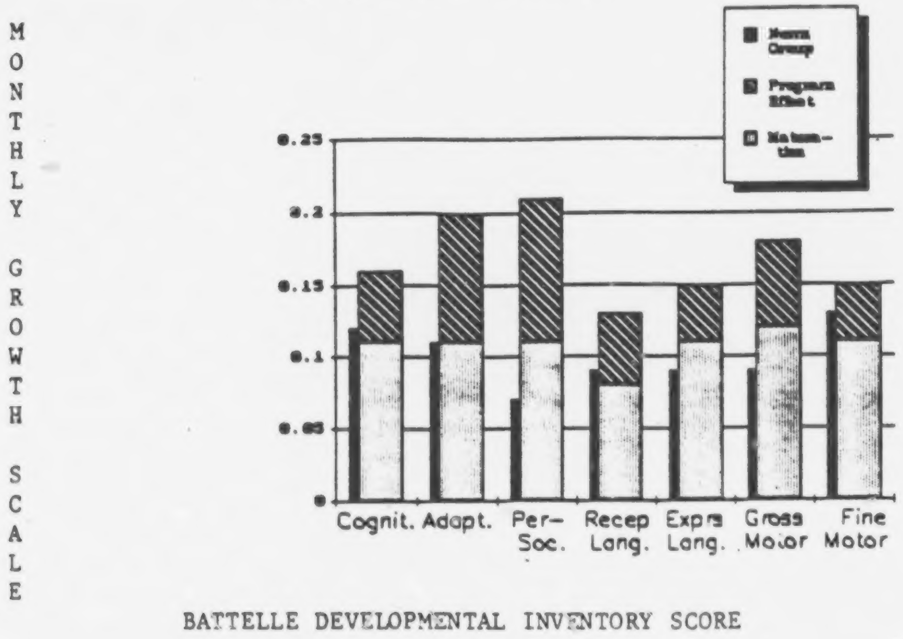
Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Language-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)



the adaptive scores.) In other words, the children's program participation almost doubled their monthly growth rate over what one would expect from maturation alone. Figure E.2 also shows that the short-term growth rate expected from maturation alone was close to the norm group's in most areas of development. The program benefits increased the short-term growth rates in all areas.

FIGURE E.2

Monthly Growth Rates Due to Short-term Program Benefits and Maturation Compared to Age Norms for the Language-Impaired Group

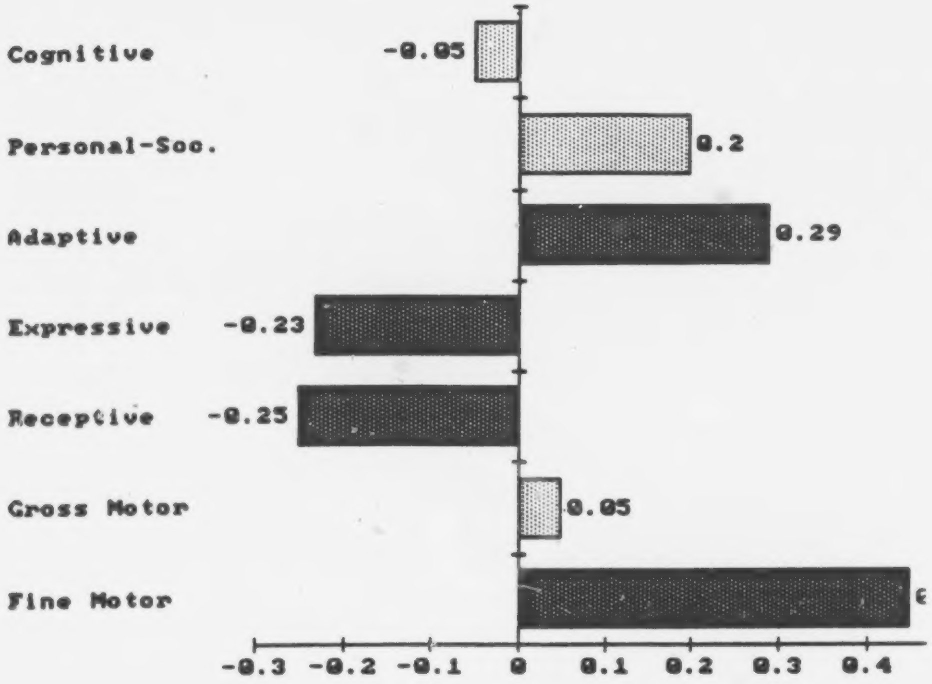


Also important for the Language-Impaired group, services were more effective when they reached the children at a younger age. The relationships between program benefits and a child's age are shown in Figure E.3. For example, the correlation between age and program benefit was -.25 in receptive language and -.23 in expressive language. This means that younger language impaired children responded better to their services in the language areas.

In addition, however, Figure E.3 also shows that children at different ages respond in different ways to programs. For example, older children showed higher program benefits in the adaptive area (.29 correlation) and in the fine motor area (.45 correlation between age and program benefit), even though no specific programs were focused in these areas. (These results come from a regression analysis which determined the relationship of age to program benefits in each of the BDI domains apart from any differences due to sex, race, or developmental level on the other BDI scores. The same analysis indicated no association between sex or race and program effects.)

FIGURE E.3

Correlation Between Short-term Program Effects and a Child's Age at Pretest for Seven Developmental Domains, Language-Impaired Group



NOTE: Correlations are expressed as standardized regression coefficients in a regression model with age, sex, race, and all seven BDI pretests; N - 148. The darker bars indicate correlations statistically significant at or below the .10 probability level.

FINDINGS FOR MULTI-HANDICAPPED GROUP

Handicapping conditions and services. These children show the most serious developmental problems across the board of all children in the study. For example, the group includes children with cerebral palsy, Down's Syndrome, other genetic disorders, or general developmental delays. In their first year of special education, virtually all of the children with multiple handicaps were enrolled in a special education classroom program, and a few received services in the home. These children also received speech/language, occupational, and physical therapy, with the largest percentage receiving speech/language therapy.

Development rates. Figure E.4 shows the developmental levels and long-term growth of these children compared to the age norms. They scored well below the age norms in all areas, and although their early short-term growth may have been close to normal, after two and three years they fell farther behind the age norms in all areas. (The fourth data point in Figure E.4 is unduly low because the small number of children with complete longitudinal data had particularly low scores across the three years.)

FIGURE E.4A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Multihandicapped Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

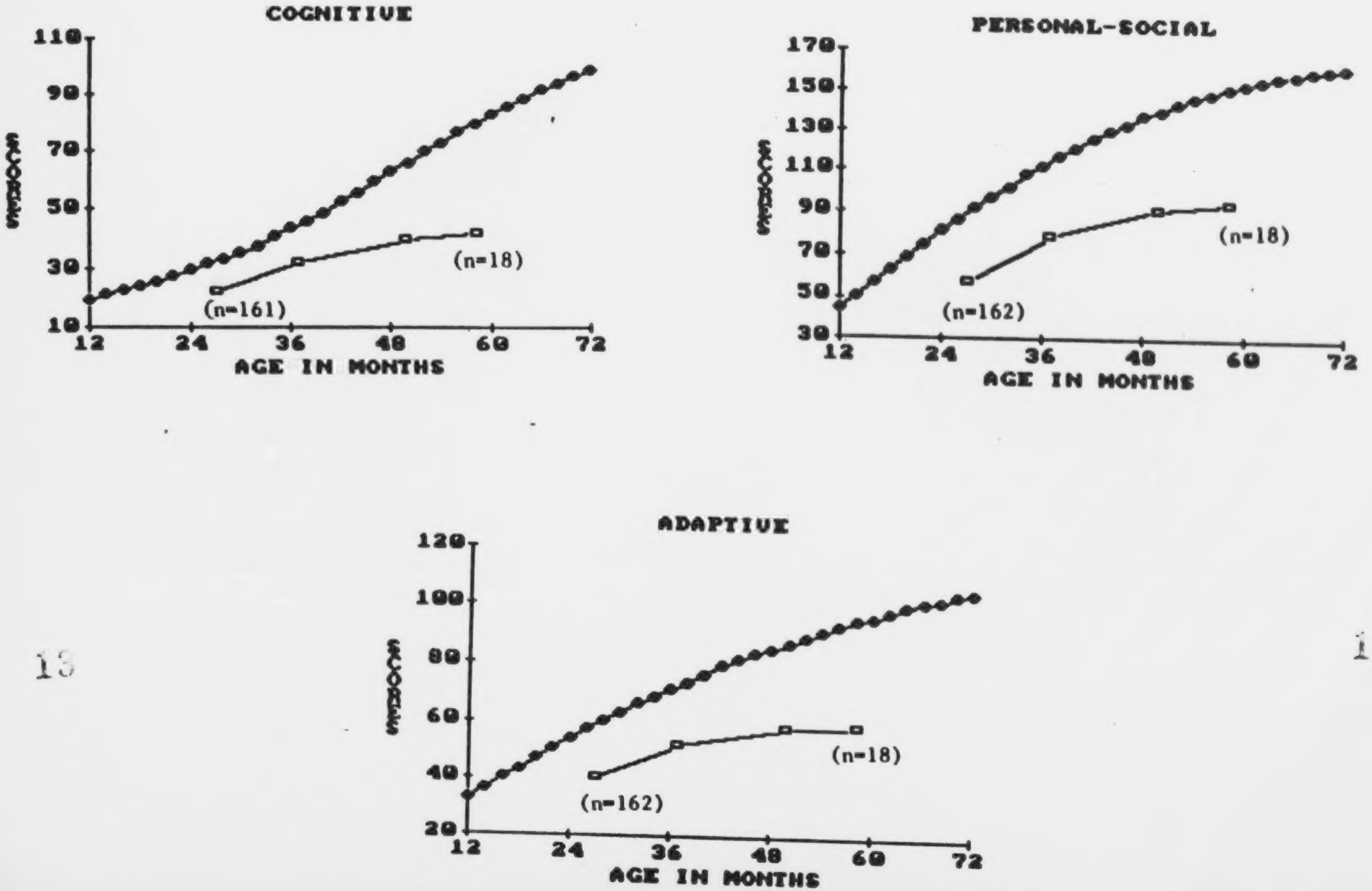
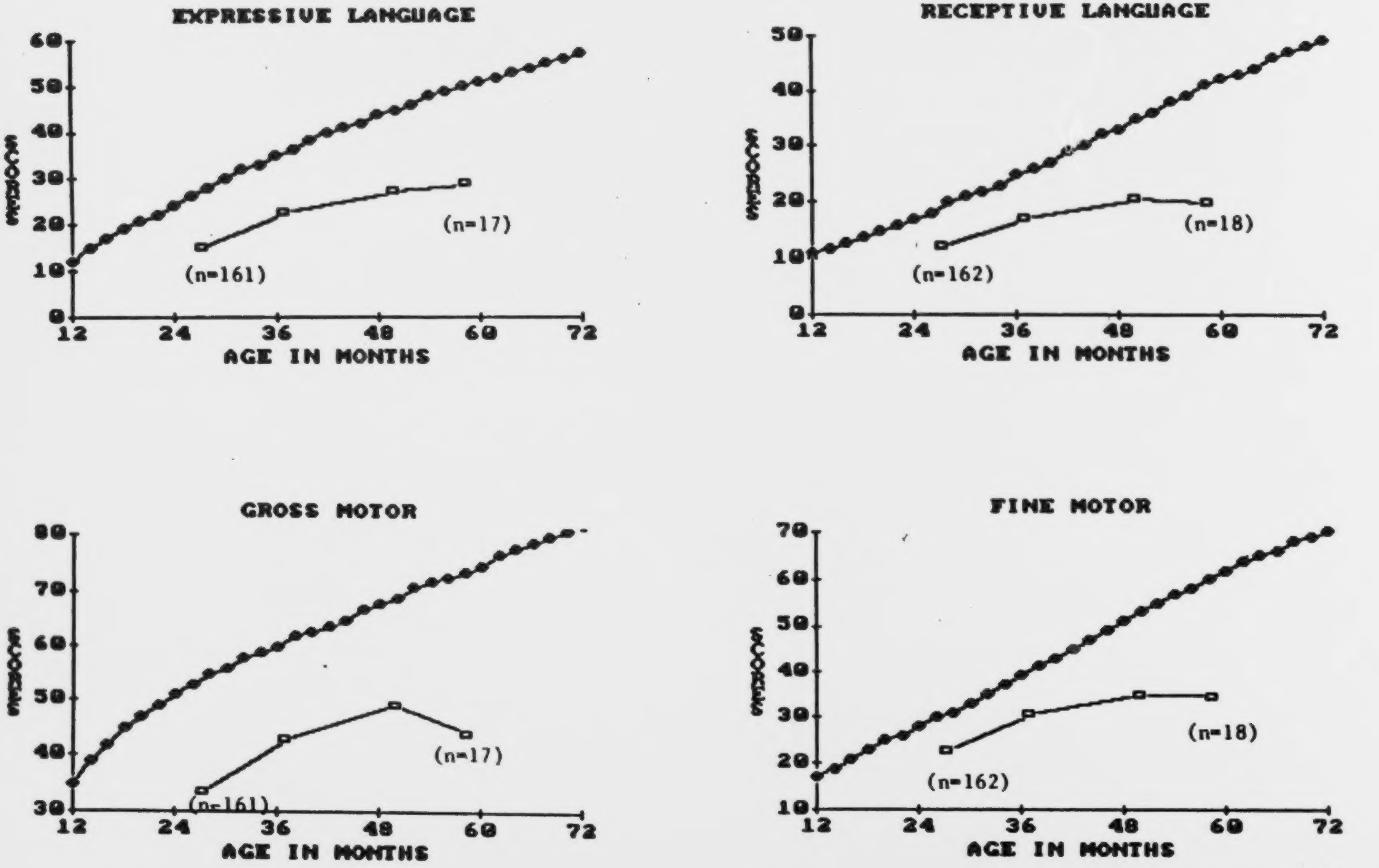


FIGURE E.4B

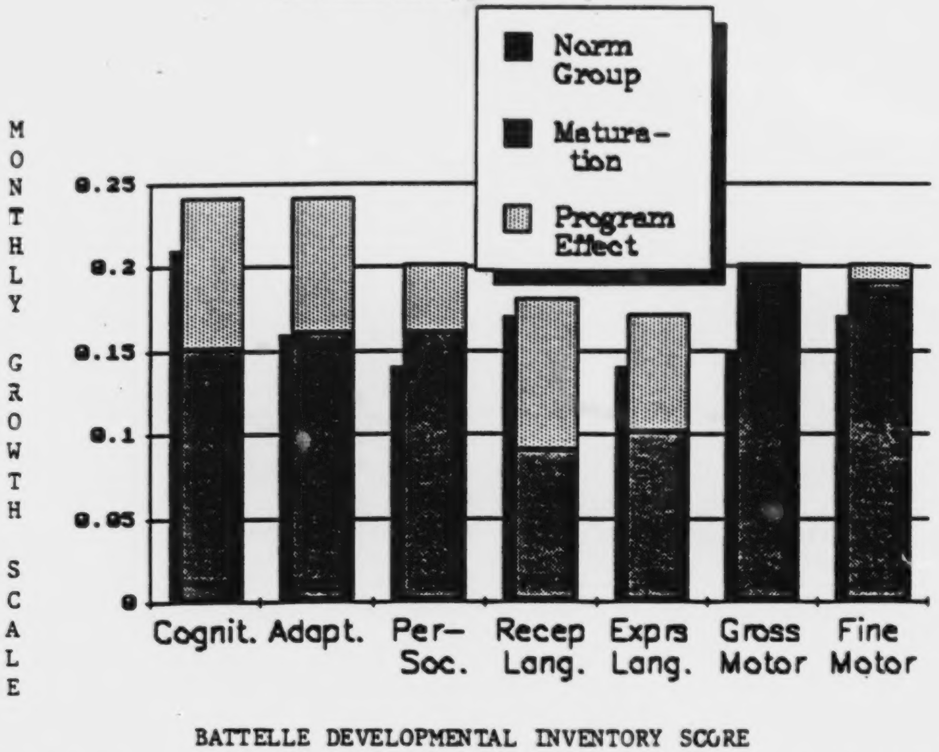
Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Multihandicapped Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)



Short-term program effects. Figure E.5 shows that these children received short-term benefits from the special education services in all areas except their motor skills. Their expected monthly growth rate in the crucial cognitive and language areas is, not surprisingly, below the norm group's growth rate; yet in those areas, the special education services boosted their monthly growth rates to near-normal levels. They also derived program benefits in the personal-social and adaptive areas.

FIGURE E.5

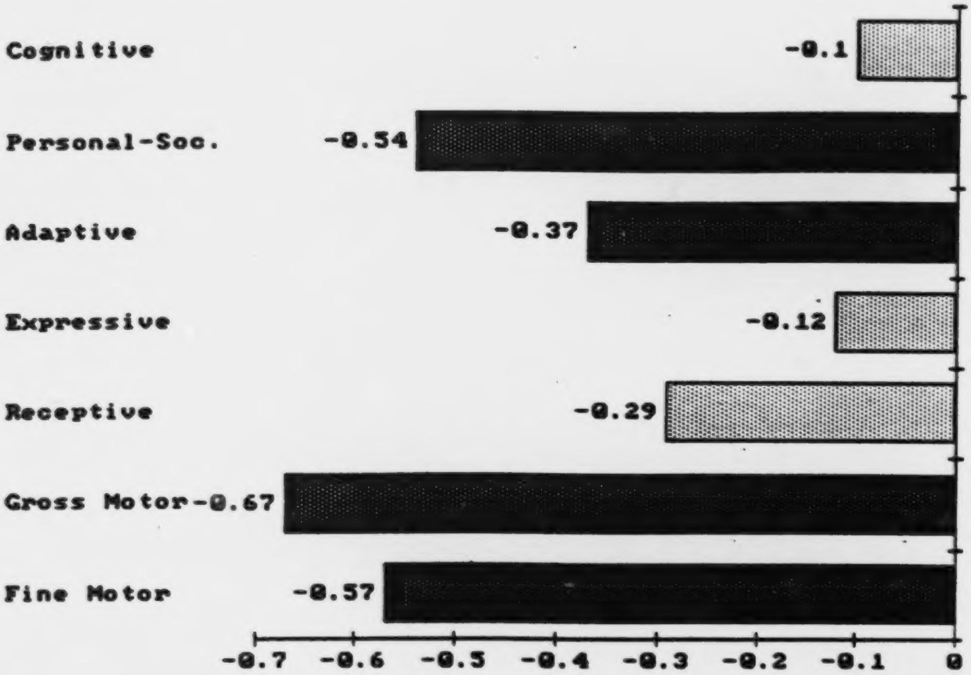
Monthly Growth Rates Due to Short-term Program Benefits and Maturation Compared to Age Norms for the Multihandicapped Group



As with the Language-Impaired group, the children who received services at an earlier age tended to benefit more from the programs over the short term. For example, Figure E.6 shows significant negative correlations between a child's age and short-term program benefits in the personal-social (-.54), adaptive (-.37), and motor areas (-.57 and -.67). Also important, but not shown in this figure, is evidence that the multihandicapped child's relative strengths in the adaptive and language areas help the child to respond successfully to the special services. That is, there is a positive correlation of adaptive and expressive language skills with short-term program effects in the cognitive and personal-social areas. (These correlations run between .60 and .80.) In other words, strengths in some areas help the multihandicapped child to overcome weaknesses in other areas.

FIGURE E.6

Correlation Between Short-term Program Effects and a Child's Age at Pretest for Seven Developmental Domains, Multihandicapped Group



NOTE: Correlations are expressed as standardized regression coefficients in a regression model with age, sex, race, and all seven BDI pretests; N = 115. The darker bars indicate correlations statistically significant at or below the .10 probability level.

FINDINGS FOR SPEECH-IMPAIRED GROUP

Handicapping conditions and services. These children had specific difficulties in speech articulation and fluency. Apart from these areas, speech-impaired children showed near-normal development. Almost all of these children received only itinerant speech therapy their first year of services and apart from that remained at home or attended a regular day-care or preschool program.

Development rates. Figure E.7 on the following pages shows that these children had near-normal skill levels at pretest and throughout the three-year study in most areas of the BDI. However, their expressive and receptive language scores were low. Their observed growth rate between the ages of four and seven years matched or even slightly exceeded that of the test publisher's norm group so that in several areas they tended to get closer to the age norms. It should be noted that the BDI does not have specific measures of speech articulation or fluency which are the primary deficits in this group.

FIGURE E.7A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Speech-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

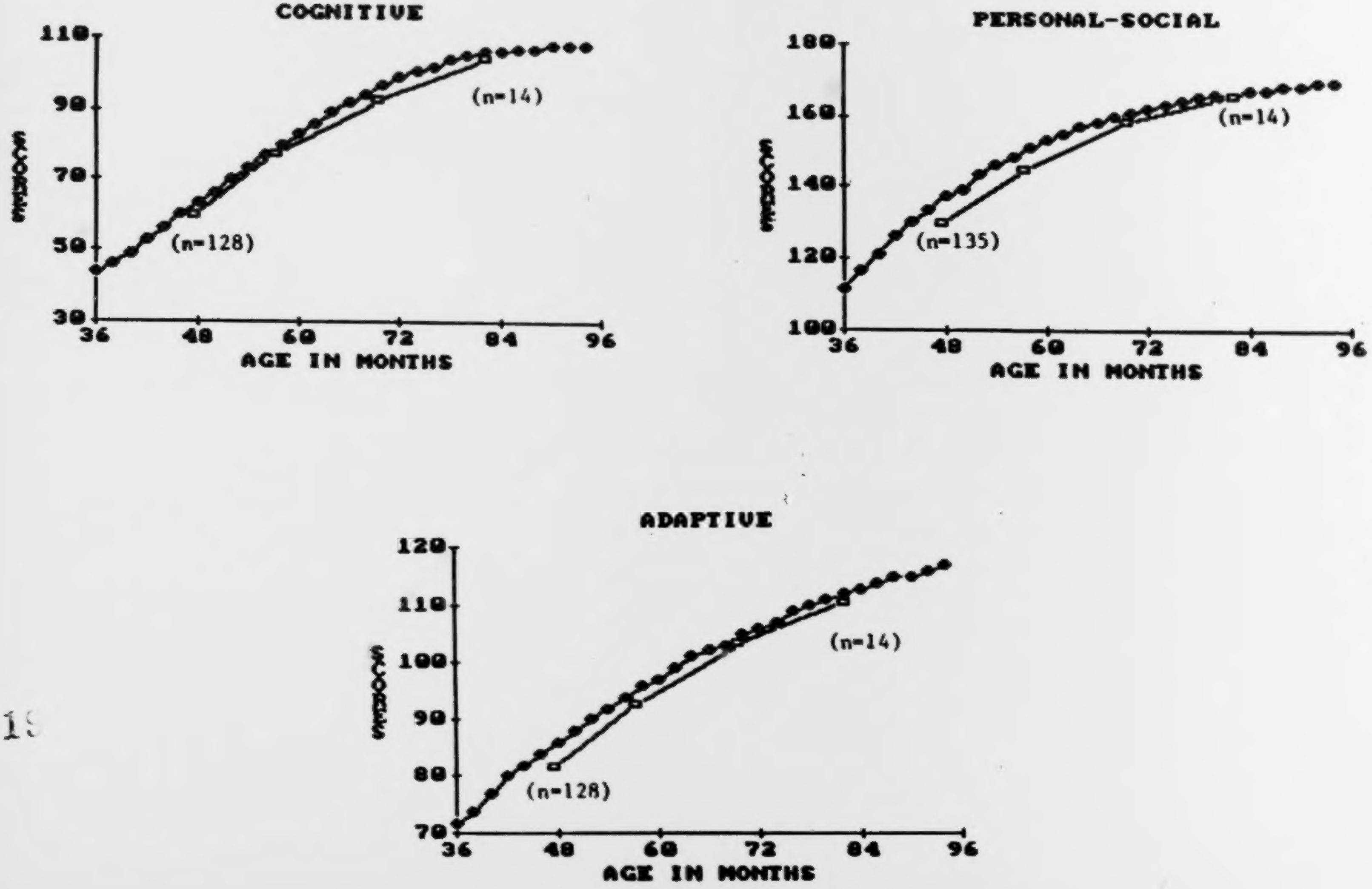
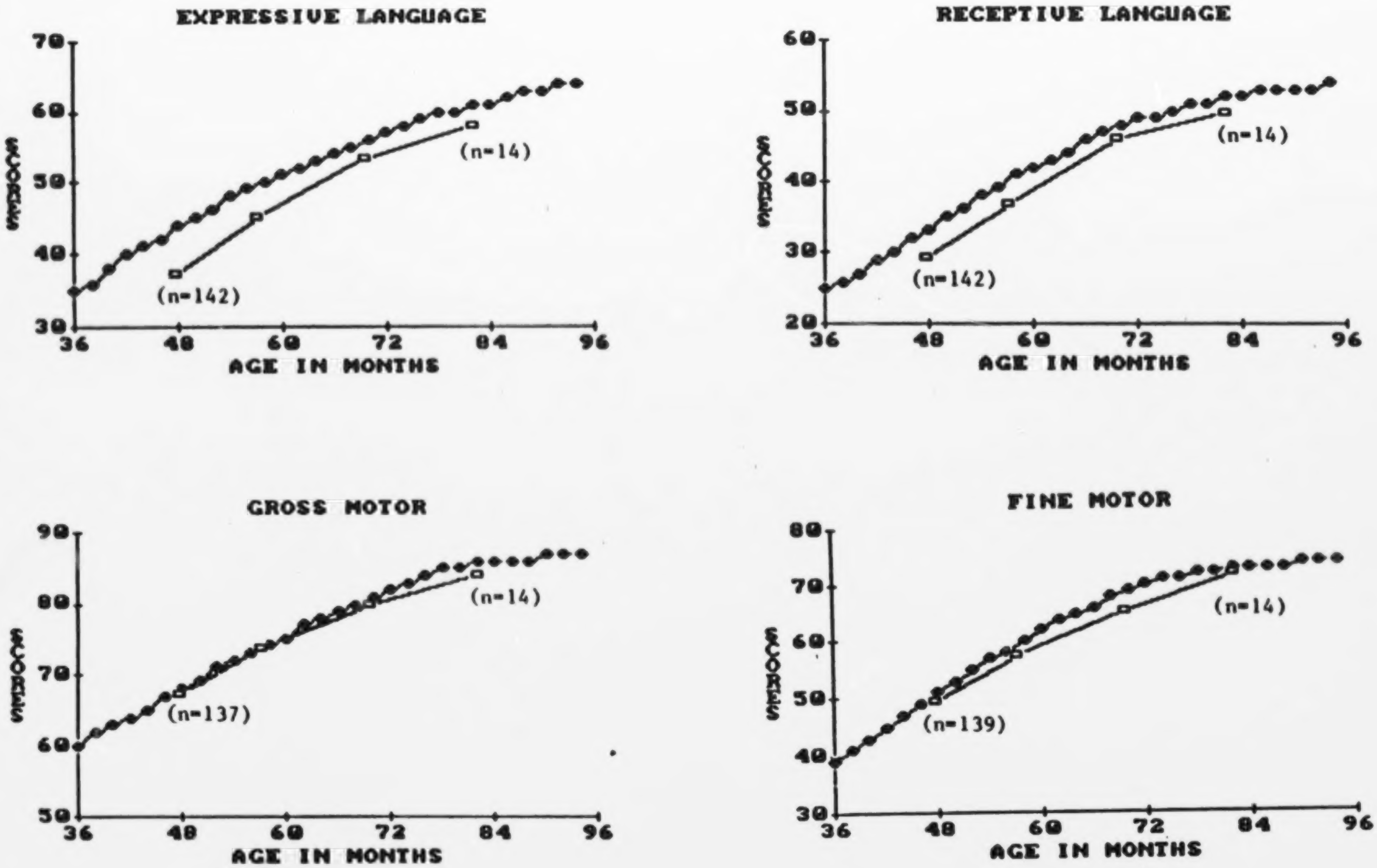


FIGURE E.7B

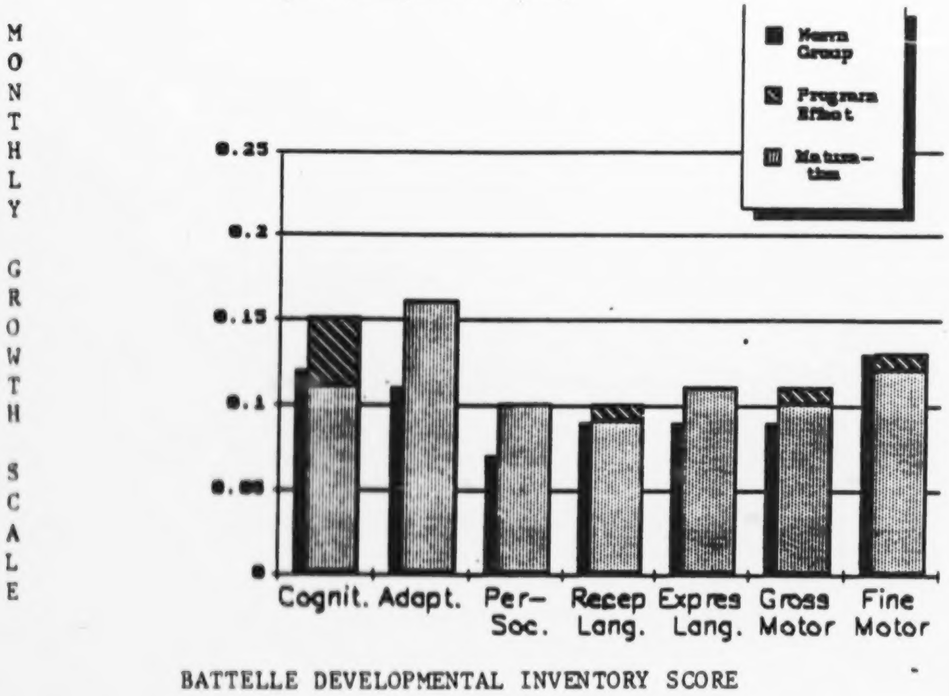
Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Speech-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)



Short-term program effects. A short-term benefit was found for this group only in the cognitive area, as shown in Figure E.8. In all other areas, the speech group grew at about the same rate or slightly faster than the norm group; but they showed no specific program benefits. As noted above, the special program for these children was limited to speech therapy, and the BDI did not specifically assess these areas.

FIGURE E.8

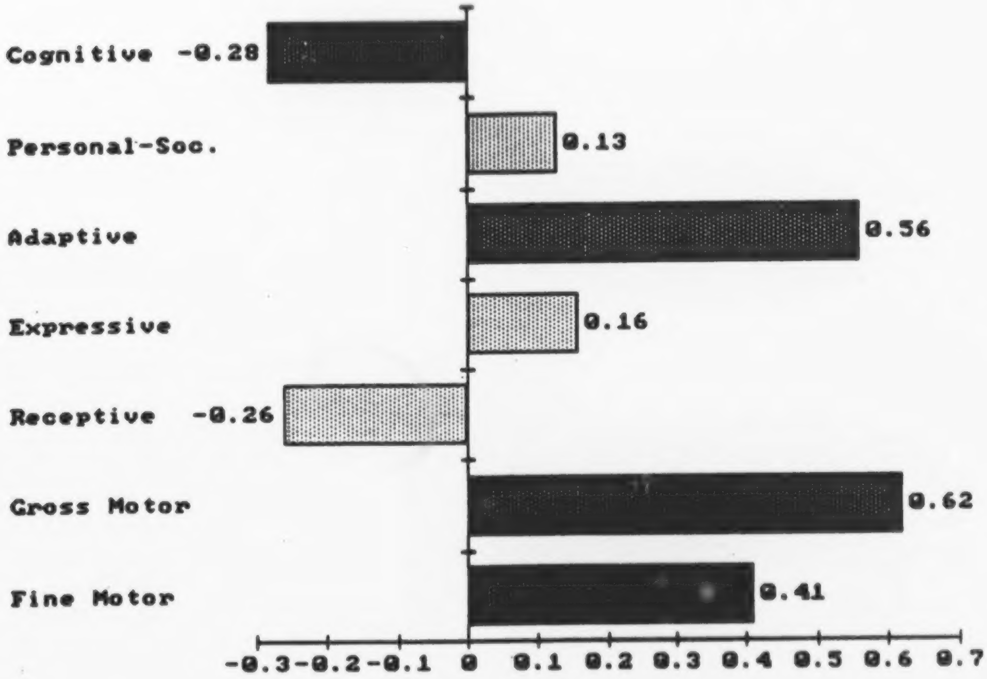
Monthly Growth Rates Due to Short-term Program Benefits and Maturation Compared to Age Norms for the Speech-Impaired Group



In the cognitive area where a short-term program benefit was observed, it was also found, as with the other two groups, that there was a tendency for the younger children to respond to the program with a higher monthly growth rate, as shown in Figure E.9 [correlation is -.28.] However, unlike the multihandicapped, the younger children in this group did not show higher short-term program gains in all areas. Rather, the older children tended to show faster monthly growth rates in the adaptive, gross motor, and fine motor areas, as noted in Figure E.9. In this respect, the speech-impaired children (a more normally developing group) resemble the language impaired group (also a more normally developing group than the multihandicapped). Thus, while the special preschool services tend to provide more help to the younger children, such a program-age relationship is not consistent across all developmental areas for all handicapped groups.

FIGURE E.9

Correlation Between Short-term Program Effects and a Child's Age at Pretest for Seven Developmental Domains, Speech-Impaired Group



NOTE: Correlations are expressed as standardized regression coefficients in a regression model with age, sex, race and all seven BDI pretests; N = 75. The darker bars indicate correlations statistically significant at or below the .10 probability level.

FINDINGS FOR HEARING-IMPAIRED GROUP

Handicapping conditions and services. These children have a severe hearing impairment which likely contributed to developmental delays in most areas. In their first year of services, almost all of these children received classroom-based services designed for hearing-impaired children. About half of this group received speech or language therapy.

Development rates. Due to the small number of children (30) pretested in this group, sufficient longitudinal data were available only for the first three testing points rather than the four data points plotted for the groups above. In addition, the small sample precluded any analysis for short-term program gains. The data in Figure E.10 show that these children were near normal in the cognitive and the motor areas at pretest and slightly more delayed in the language, personal-social, gross motor, and adaptive areas. Over a two-year period, these children appeared to progress at a rate somewhat slower than the age norms.

FIGURE E.10A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Hearing-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

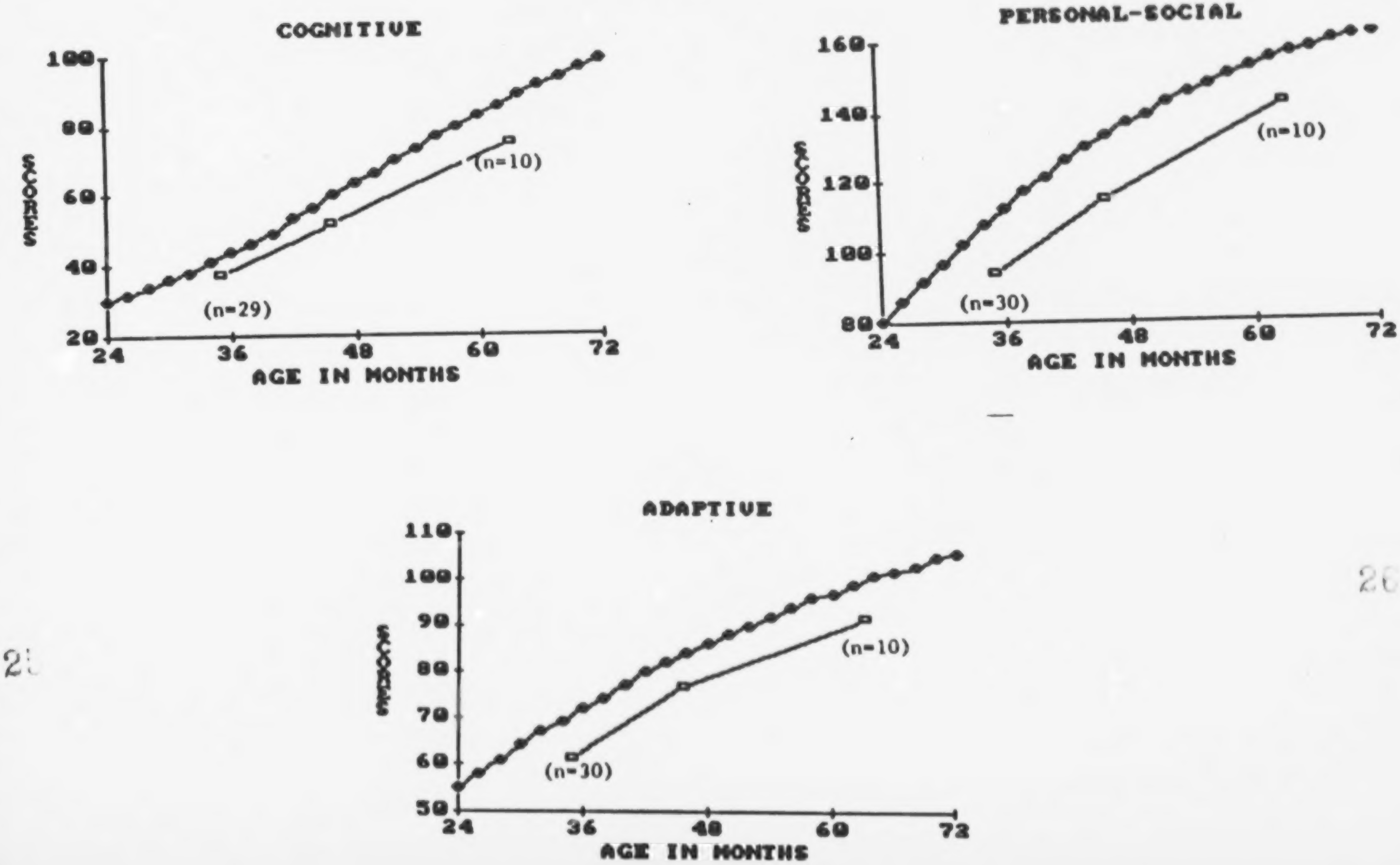
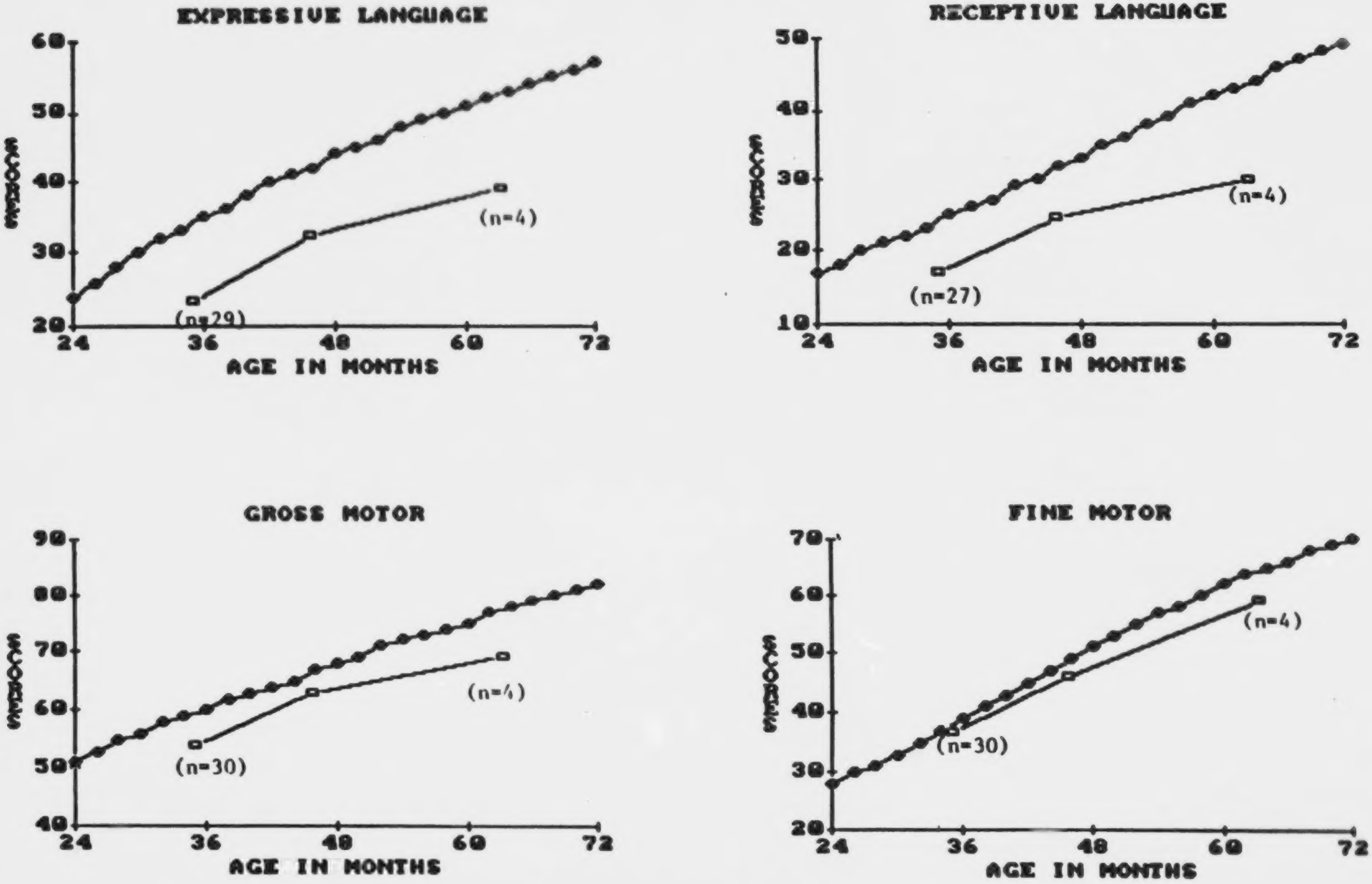


FIGURE E.10B

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Hearing-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)



FINDINGS FOR VISUALLY-IMPAIRED GROUP

Handicapping conditions and services. These children have a significant loss of vision which affected their development in most areas. As a group they were younger at pretest (about one year old) than were the other groups. This group received a mix of home and center-based services designed for visually impaired children in addition to other therapy.

Development rates. At the time of pretest, these children had near-normal skills in the personal-social, adaptive, and language areas of the BDI, as shown in Figure E.11. Their cognitive and motor functioning were somewhat delayed. However, over the two-year period represented in Figure E.11, they developed slower than the norm group. The small number of cases pretested (27) does not allow extensive longitudinal data or short-term analyses of program benefits. As with the hearing-impaired group, fuller conclusions require the accumulation of many more cases.

FIGURE E.11A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Visually-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

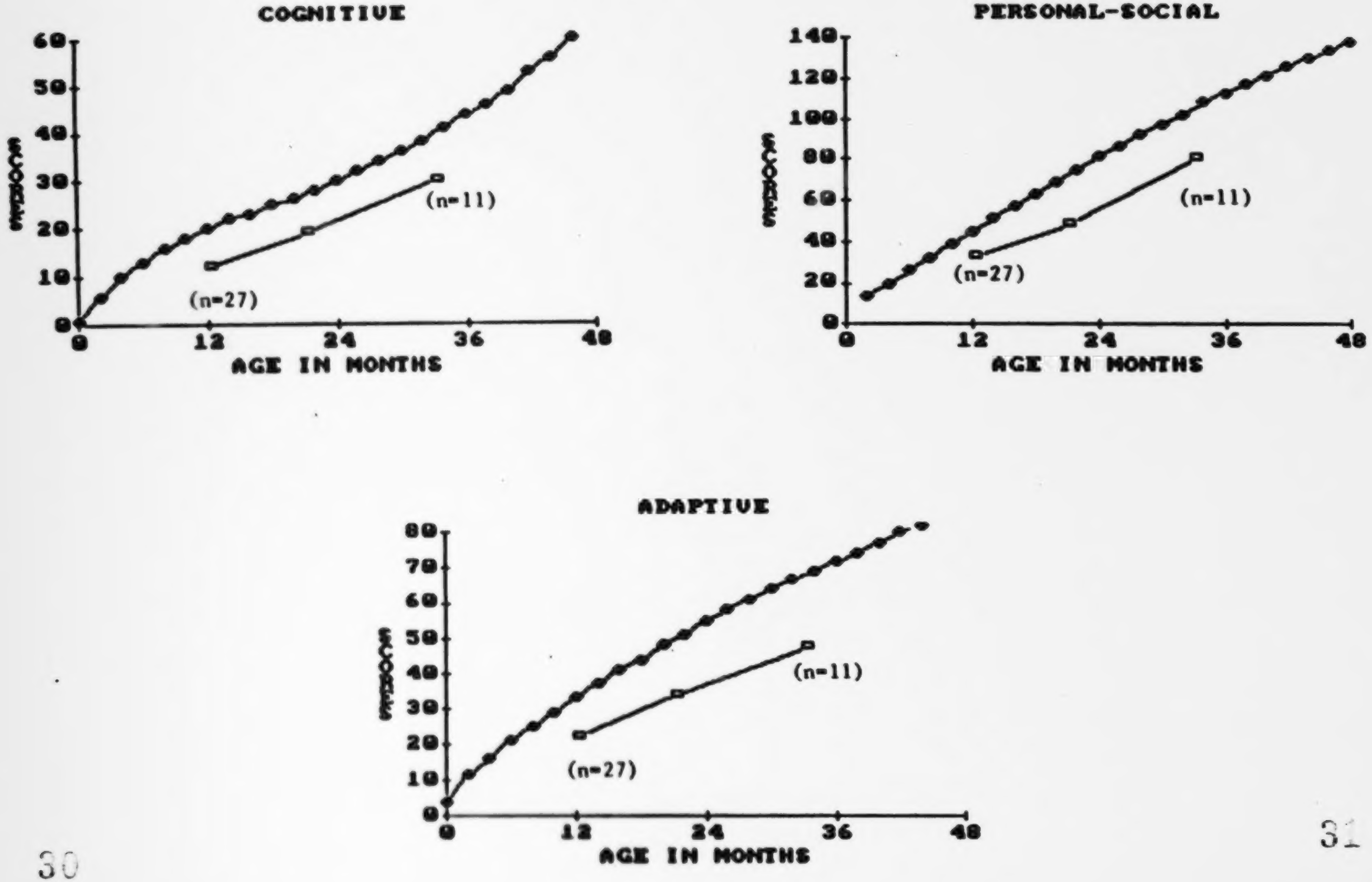
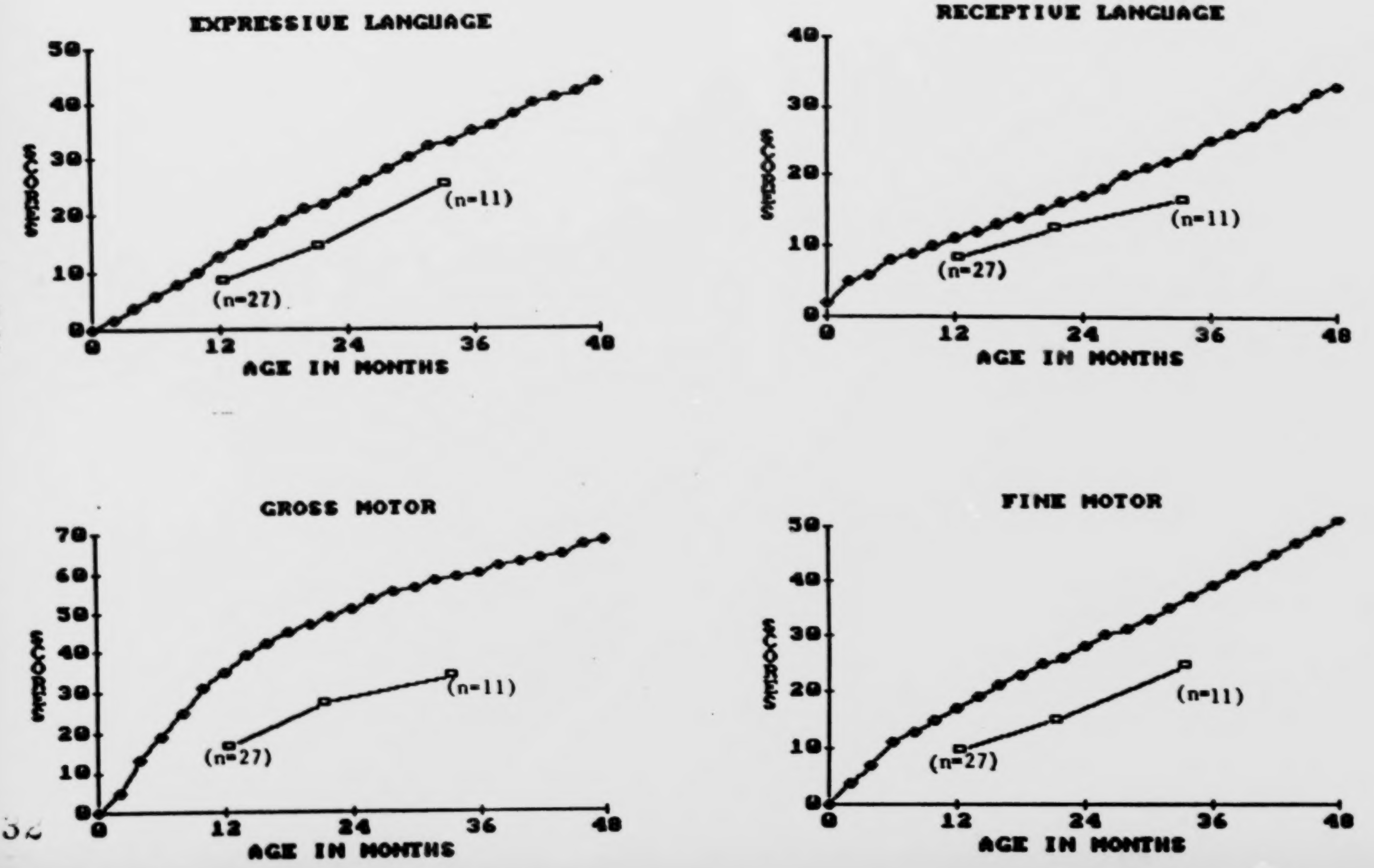


FIGURE E.11B

Growth Rates on Developmental Scores for Norm Group (Heavy Line) And Visually-Impaired Group (Light Line). (Note: Since all cohorts are combined, numbers of cases vary by time point.)

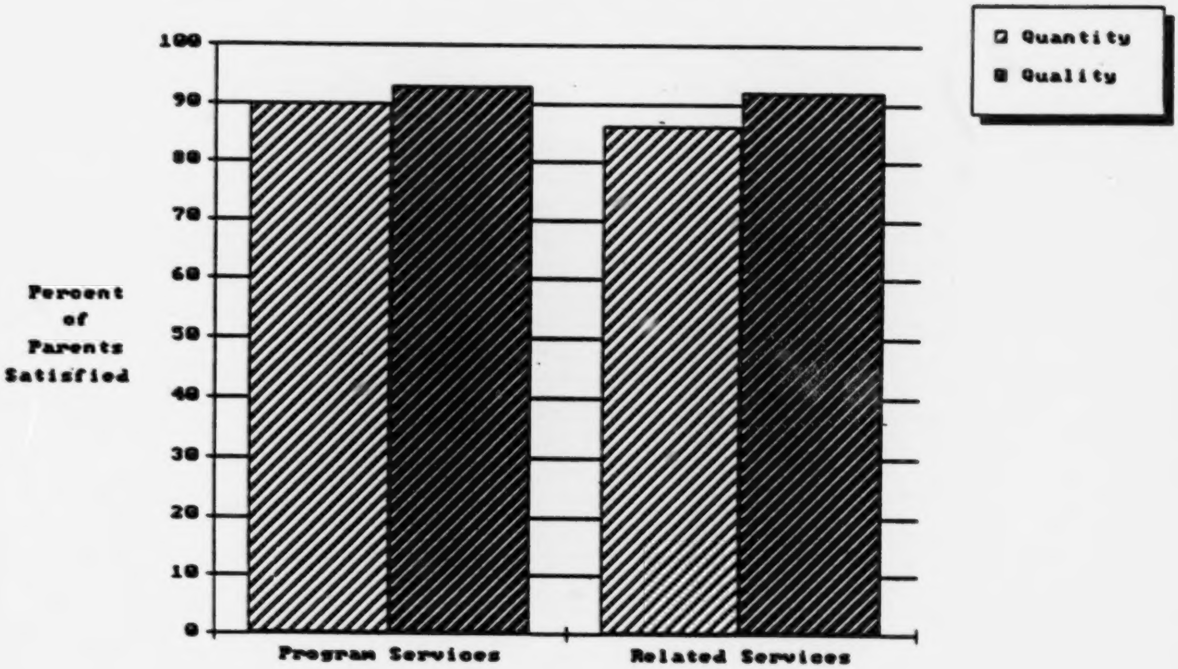


FAMILY DATA

The overwhelming majority (over 90 percent) of the parents who responded to questionnaires were satisfied with the overall amount and quality of preschool services. Satisfaction levels with related services (speech/language, occupational or physical therapy, behavior management) ranged between 80 and 95 percent. Figure E.12 shows the satisfaction levels combined across the related services as well as the satisfaction with the special program services.

FIGURE E.12

Parental Satisfaction with Quantity and Quality of Preschool Program Services and Related Services



Parents' comments about the most-liked part of services included the staff, the quality or nature of services, the fact that the child made progress, or the individualized attention given to their child. The least liked parts of services were too little program time or services, poor communication between service providers and parents, and bus problems. In summary, parents seemed to want more of a good thing.

By the end of the child's first year in special education, almost half of the responding families reported improvements in family relationships between and among adults and children, and about one third continued to report improved relationships after two or three years. The most common responses about effect of special education on the family were better communication with child and increased knowledge of child's needs. Less than 5 percent of the parents mentioned negative changes, and such responses diminished even more after two and three years of services.

SUMMARY This longitudinal study shows significant benefits to children receiving preschool special education services. Moreover, preschool services appear to produce greater benefits when they reach the children at younger ages, particularly for the multihandicapped.

These benefits and their relationship with a child's age vary, however, across different developmental areas and across handicapping conditions. For example:

> The Language-Impaired group almost doubled their short-term growth rates in the adaptive and personal-social areas over the maturational growth rates expected for them without preschool services. The Language-Impaired group also showed short-term program benefits to a lesser degree in all other areas measured. The younger children showed more program benefits in the language areas than did the older children.
>
> The Multihandicapped group showed significantly increased short-term growth rates due to the special preschool programs in the cognitive, adaptive, and language areas. Also, younger children tended to show greater program benefits across the board. In addition, some evidence suggests that some multihandicapped children were able to use strengths in the cognitive and adaptive areas to help them get more benefit from the programs in other developmental areas.
>
> The Speech-Impaired group showed short-term program benefits in the cognitive domain, and the younger children in this group showed the most positive effects in this area.
>
> Short-term program effects could not be determined for the visually nor the hearing-impaired groups since too few children were available in these groups.

Results from parent interviews were also very encouraging. Parents highly endorsed the quantity and quality of the preschool services their children received. In addition, about half of the families reported improved family relationships. Better communication with and understanding of their children also occurred following placement in special education. The most frequently cited parental complaint was the lack of more services.

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Tricia Spivey
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Many public and nonpublic providers of preschool special education in Montgomery County cooperated during the course of this study, which made data collection much easier.

Tom O'Toole and Pat Edmister, from the Department of Special Education and Related Services, provided support in planning and conducting the study.

Liz Jenny played a major role in coding and editing the data. She also did many other tasks to keep the study moving along.

Laura Engler helped with data analysis and prepared most of the graphics for this report.

CHAPTER 1

Overview of Project

The purpose of the Preschool Evaluation Project was to establish a longitudinal data base to study the effects of early education for the handicapped. While early childhood special education enjoys widespread professional support and has received federal dollars for nearly 20 years, research findings on the effectiveness of early education for the handicapped have come almost exclusively from university-based experimental programs. Research on early intervention services provided by a public agency to a range of handicapped children has been rare with equivocal findings. Research design and methodology, in many cases, have been inadequate or unsound due to the perpetual problem of limited funds, as well as the ethical and legal responsibilities to provide cost-effective services to these children. Although this project was not able to eliminate all these research problems, a promising new analytic technique was used which makes this study unique in early childhood special education. This report presents findings from the Preschool Evaluation Project, which addressed the following research questions:

1. What are the long-term growth patterns of handicapped children who begin special education between birth and five years of age?

2. What are the short-term benefits of preschool special education?

3. What kind of children show the most short-term benefits?

4. How does participation in preschool special education affect the handicapped child's family?

5. How satisfied are parents with the preschool services their handicapped children receive?

Background

In October 1980, Montgomery County Public Schools (MCPS) received funding from the Maryland State Department of Education (MSDE) to develop a model, or guidelines, for evaluating programs for handicapped preschoolers. This effort, called the Preschool Evaluation Project, was jointly administered by the Department of Educational Accountability and the Department of Special Education and Related Services. The final product was a handbook for evaluation researchers, which has been distributed nationwide.

During the course of model development, it became clear that a longitudinal data base should be established by MCPS to answer questions about the efficacy of early childhood special education. MSDE used P.L. 94-142 discretionary moneys to continue supporting the Preschool Evaluation Project from September 1983 through June 1985. From October 1985 through September 1987, funding was provided through a Cooperative Agreement (#630937) to MSDE from the U.S. Office of Special Education Programs.

Conceptual Model

The Preschool Evaluation Project looked at program effectiveness from two points of view: 1) changes in the child and 2) changes in the family. Changes in the child (as measured by developmental assessment) brought about as a result of program participation may vary as a function of child and family variables. The relationship between these two categories of variables and the information each represents is illustrated in Figure 1.1.

The Project addressed the question of whether participation in an early childhood special education program resulted in growth above and beyond what would have been expected from maturation alone. Questions about family outcomes were more general. For example, do families report a change in the handicapped child's interaction with siblings following placement in a special education program?

The paths linking the boxes in Figure 1.1 show the possible relationships between the variables studied. For example, posttest developmental status may be related to the child's sex (child variable) and socioeconomic status (family variable). Figure 1.1 is a simplified representation of the conceptual model guiding the project because it illustrates only one testing period. Because the project staff collected data over several years, the longitudinal conceptual model is more complex. The longitudinal model includes the possibility of different growth patterns for different children.

This report parallels the conceptual model illustrated in Figure 1.1. Chapter 2 is a discussion of child and family variables, as well as pretest developmental status. Chapter 3 presents data on preschool services. Chapter 4 addresses posttest developmental status. Chapter 5 deals with posttest family characteristics.

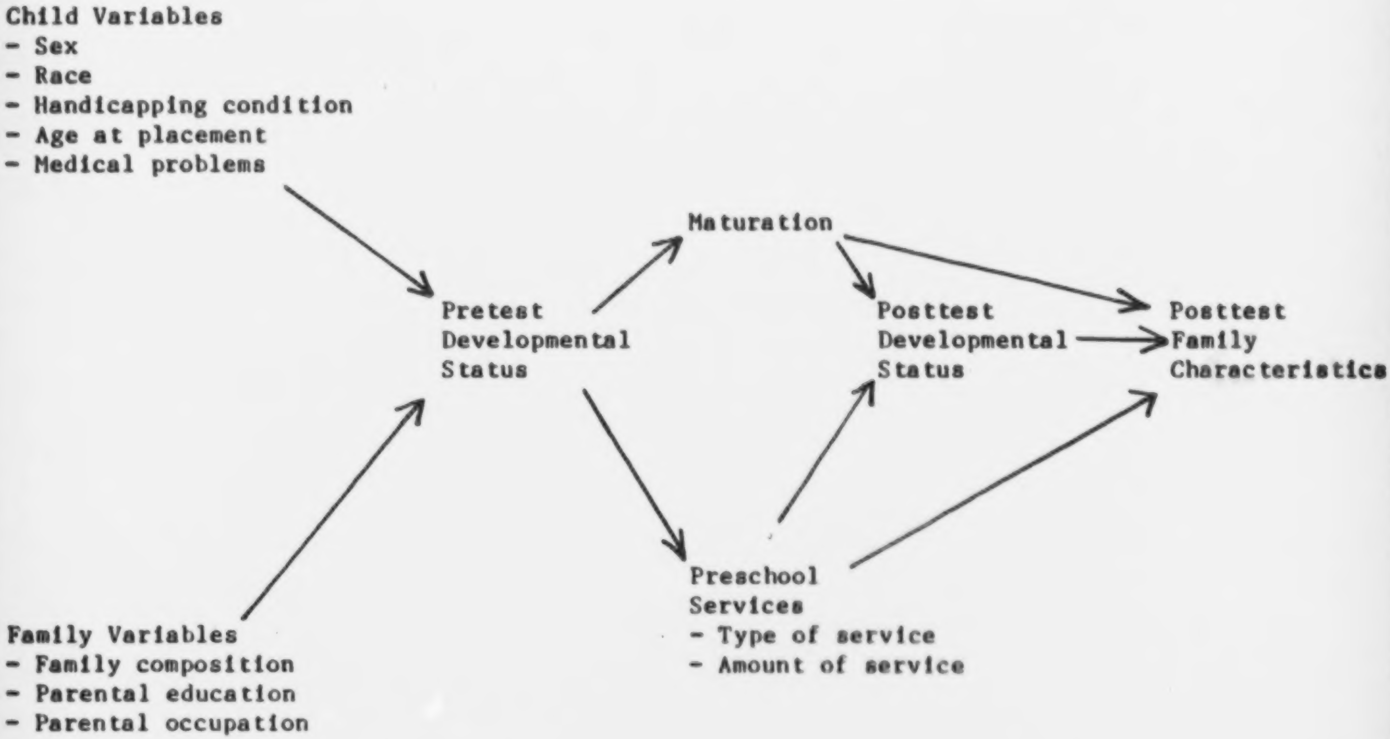
Setting

Montgomery County is located outside of Washington, D.C.. It is generally a suburban county, although it encompasses urban, suburban, and rural areas. In the 1985-86 school year, 92,871 children were enrolled in MCPS, making it one of the 20 largest school districts in the country. According to the Office of Economic Development of the Montgomery County Government, the mean household income in 1983 was $54,160. The United States Census Bureau's figure for 1983 mean household income for the country as a whole was $25,401.

While Montgomery County is not representative of a "typical" county in Maryland or the nation, it is in many ways well suited to research of this type. Maryland mandates special education from birth if a handicapping condition is identified. MCPS serves over 600 handicapped preschoolers per year in a variety of programs and offers an array of related services (e.g., speech, occupational, and physical therapy.) Most children are served in the six programs administered by MCPS. The others are served in four private programs with tuition paid by the school system. Therefore, MCPS provides a rich field of data for a systemwide study of effects of early special education.

FIGURE 1.1

Conceptual Model of the Preschool Evaluation Project


Child Variables
- Sex
- Race
- Handicapping condition
- Age at placement
- Medical problems
Maturation
Pretest Developmental Status
Posttest Developmental Status
Posttest Family Characteristics
Preschool Services
- Type of service
- Amount of service
Family Variables
- Family composition
- Parental education
- Parental occupation

Preschool children are referred to the MCPS placement office by their parents, medical professionals, social service agencies, educators, or the MCPS Child Find office. Once sufficient evaluation information is available, parents and placement committee members meet to discuss the child's strengths and needs and decide the most appropriate services. At this time, the child's primary handicapping condition, if any, is determined.

Based on their educational needs and age at placement, preschoolers are enrolled in a program which is center-based, home-based, or itinerant (i.e., children come one or more times per week to an elementary school to receive services). Children with developmental delays in several areas are served in programs where educational and related therapy services are available. Children with primary visual or auditory impairments are enrolled in a program which focuses on the unique educational needs of children with these specific sensory impairments. Speech and/or language needs may be met in a full-time classroom or through itinerant services at a local school or Headstart program.

Study Procedures

Data Collection. Each child's developmental skills were assessed at the time of placement in special education and at the end of each school year. Specifics about a child's special services were collected from service providers and centralized computer records at several time points, as were attendance data. Questionnaires were used to collect family data at the time of placement and at the end of each school year, and record reviews were conducted to obtain demographic and medical information. Parents' satisfaction with services was measured via a questionnaire at the end of each school year. A detailed description of the data collection procedures can be found in Appendix A.

Data Analysis. Short-term program benefits were measured using a statistical technique called "Value Added Analysis." Based on the high correlation between age and pretest scores, this technique used pretest scores and other variables as appropriate to project where children would have been expected to score at the time of their first posttest. Progress beyond the projected level was interpreted as the "value added" by the educational intervention. Projections were adjusted for subgroups of children based on demographic and family data (e.g., sex, race, and handicap) to reduce the error in the projections. Developmental progress two and three years after placement was analyzed descriptively, as well as amount and type of special services, attendance data, and parental satisfaction. Value Added Analysis is discussed in more detail in Chapter 4 and Appendix D.

Limitations of the Study. The primary limitation of the study was that it was not possible to have an unserved control group to compare child growth over time because Maryland mandates special education for all handicapped children from birth. Although there may be some young handicapped children unserved in Montgomery County, the reasons for lack of service (e.g., parent refusal, lack of parental information about services, or nonidentification) would make these children very atypical.

The Value Added technique described above was selected for data analysis because the use of a control group was not possible. This technique created a "statistical control group," which was a satisfactory alternative for analysis of short-term growth. This analytical option could not be extended more than one year beyond the pretest because projections of growth for two or more years ahead would introduce too much error for samples of young children. However, descriptive data on long-term growth are a significant contribution to the field, considering the paucity to date of such data.

The second limitation was that the project could not manipulate the services (treatment) received because, by law, children were placed in the program appropriate to their needs as determined by the MCPS placement committee and the parents. Each of the programs serving preschool handicapped children in Montgomery County is geared to educating children with a particular set of strengths and needs. For example, one program serves children whose primary need is speech and/or language therapy, and these children have minimal or no need for intervention in other developmental areas. For this reason, comparing the effects of different services on similar children was neither possible nor particularly relevant.

Overview of Report

The results of the study conducted by the Preschool Evaluation Project are discussed in the following chapters:

> Chapter 2 is a description of the study sample, including information about the children and their families.
>
> Chapter 3 contains information about the amount and type of special education services the children received and changes in intensity of services over time.
>
> Chapter 4 is a discussion of the long-term developmental growth of the children in the study and the short-term program benefits. "Short term" refers to the period of time between pretest and the first posttest at the end of the first school year in special education.
>
> Chapter 5 presents the changes in the family following the child's placement in special education, including parental employment status, family relationships, child-sibling play, social behavior, and financial situation.
>
> Chapter 6 presents data on parents' satisfaction with the special education services their children are receiving.
>
> Chapter 7 is a discussion of the policy and research implications of these data.

A detailed description of the study procedures can be found in the appendices.

CHAPTER 2

Child and Family Sample

Sample Selection Procedure

Beginning in September 1983, children between birth and five years who were newly placed in special services by MCPS were identified for inclusion in the project. An introductory letter explaining the project was mailed to parents, and about a week later, project staff telephoned the families to answer questions and schedule testing. Of the 775 families telephoned, only 17 (2%) refused to participate. The most frequent reason given for nonparticipation was the parents' reluctance to have additional testing done. Most of the children (82%) whose parents refused to participate were speech or language impaired. Sample selection was a continuous process from September 1983 to January 1986.

The project planned to include all handicapped preschoolers newly identified by MCPS between September 1983 and January 1986. However, in addition to the families who refused, approximately 30 children were not included because, at certain points, project staff could not keep up with the pretesting demands. Also, toward the end of the three-year period, only children with hearing impairments, vision impairments, or moderate to profound multiple handicaps were added to the sample because the numbers of these children were relatively small, which was a problem for data analysis.

Out of the 758 children who were pretested, data were analyzed on 646. One hundred and twelve were not included in the analytic sample because of one of the following reasons: Project later learned the child had more than six months of special services prior to pretesting either in or outside of MCPS (69%), child never received special services as a preschooler even though services were recommended (22%), pretesting was not completed within a two-week period (6%), and other reasons (3%).

Of the 646 children, 124 were pretested between September 1983 and January 1984 (Cohort 1). Two hundred and fifty-one were pretested between February 1984 and October 1984 (Cohort 2). Two hundred and seventy-one were pretested between November 1984 and January 1986 (Cohort 3).

Child Characteristics

Sex and Race. Sixty-five percent of the 646 children in the sample were boys and 35 percent girls. Typically boys are overrepresented in special education programs. For example, boys made up 66 percent of the 1985-86 alternative centers (special education schools) population in MCPS.[1] Most of the children were white (73%). The racial composition of the project sample reflects somewhat higher percentages of white and black and slightly lower percentages of Hispanic and Asian children than the MCPS school population as a whole, as shown in Table 2.1.

---

1. Source: Statistical Profiles 1985-86, Montgomery County Public Schools, Department of Educational Accountability, December 1985, p.25.

TABLE 2.1

Descriptive Data on Children in Sample
(N=646)

	Percentage	
Descriptor	Sample	MCPS
Sex		
Boys	65	50
Girls	35	50
Race		
White	73	70
Black	20	15
Hispanic	4	6
Asian	3	9
Age at Pretest in Months		
0-11	8	N/A
12-23	10	
24-35	22	
36-47	28	
48+	32	
Handicap Group		
Language Impaired	41	N/A
Multihandicapped	25	
Speech Impaired	22	
Hearing Impaired	5	
Vision Impaired	4	
In Need of Assessment	3	
Other Health Impaired	<1	
Cohort		
1 - Pretested 8/83 to 1/84	19	N/A
2 - Pretested 2/84 to 10/84	39	
3 - Pretested 11/84 to 1/86	42	

Age and Handicap Group. Almost two thirds of the children were 36 months or older at the time of pretest. This indicates that identification and placement usually took place when the children were over the age of three years. Eight percent of the children were less than a year old at the time of pretest, 10 percent were between one and two years, 22 percent between two and three, 28 percent between three and four, and 32 percent over four years. These data are summarized in Table 2.1.

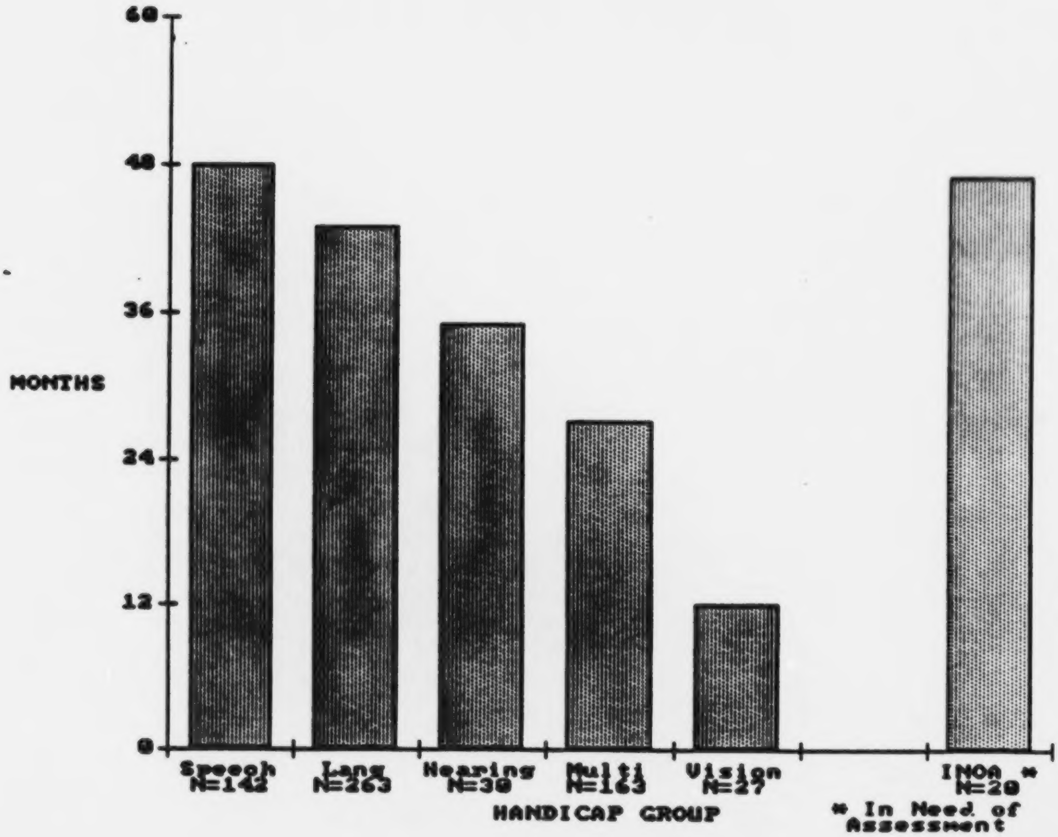
When a child is identified as handicapped and placed in special services by MCPS, his/her primary handicap is determined by the placement committee following the guidelines in the Maryland State Bylaws. The largest number of children (41%) were assigned the handicapping classification of "Language Impaired" at the time of their initial placement. The second and third most common handicaps were "Multihandicapped" (25%) and "Speech Impaired" (22%). Five and 4 percent of the sample were in the "Hearing-Impaired" and "Vision-Impaired" groups, respectively.

Children are classified as "Language Impaired" when their area of greatest need is the use and understanding of language; however, these children may also have developmental delays in other areas. The children who appear to have only deficits in speech articulation and fluency at the time of placement are classified as "Speech Impaired." Children in the "Multi-handicapped" group have significant developmental delays in two or more areas of development. The "Hearing-Impaired" and "Vision-Impaired" classifications are assigned to children whose primary handicap is that specific sensory impairment. The delays associated with the sensory impairment are considered secondary to the primary handicap. Children in the "Multihandicapped" group may have vision and/or hearing impairments; however, the sensory impairments are not their primary handicap.

The oldest children in the study were in the Speech- or Language-Impaired groups, with mean ages of 48 and 43 months, respectively, at the time of pretest. The children in the Hearing-Impaired group were a mean age of 35 months; those in the Multihandicap group, 27 months; and those in the Vision-Impaired group, 12 months, at the time of pretest. These data, illustrated in Figure 2.1, indicate that children with multiple handicaps or a primary vision impairment were identified and placed at a younger age than children in other handicap groups.

FIGURE 2.1

Mean Age at Pretest by Handicap Group

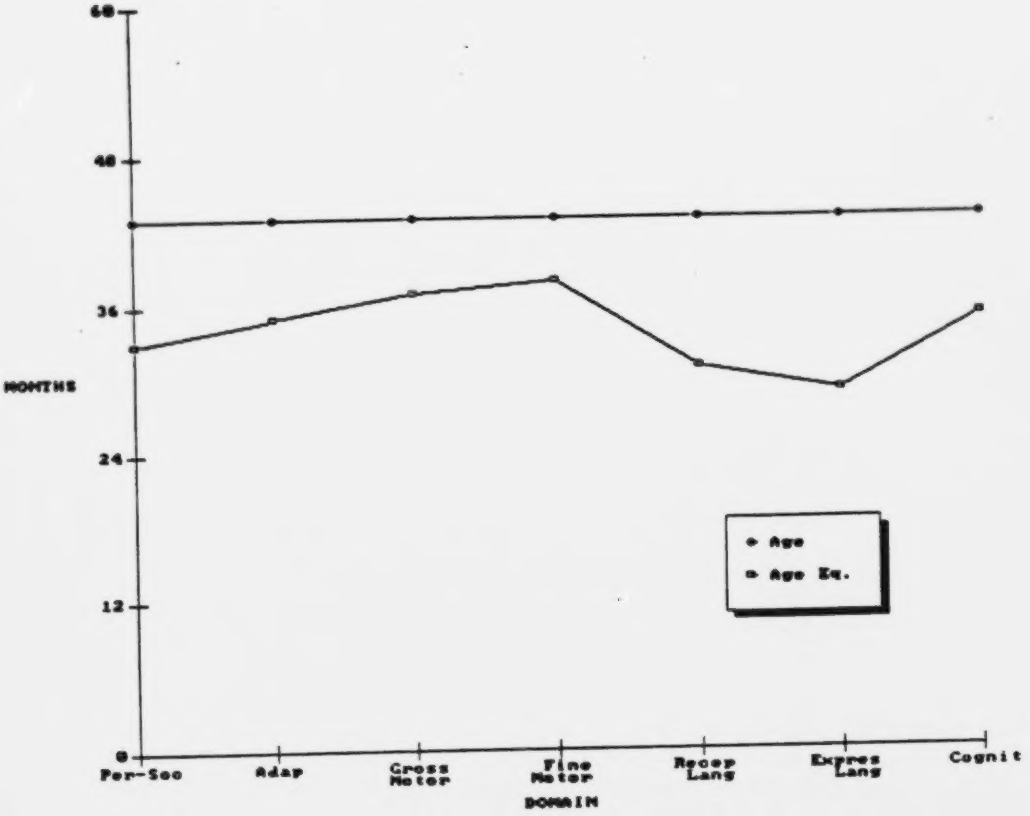


Initial Developmental Status. At the time each child entered special education services, his or her developmental status was assessed using the Battelle Developmental Inventory (BDI). The BDI measures developmental skills in the following areas: Personal-Social, Adaptive, Gross Motor, Fine Motor, Receptive Language, Expressive Language, and Cognitive. The Personal-Social and Adaptive areas of the test focus on the child's interpersonal and self-help skills. Large muscle movement and coordination are examined in the Gross Motor area. Fine Motor skills include hand and hand/eye coordination. The Language areas of the BDI assess the child's ability to understand language (Receptive Language) and the ability to communicate with language (Expressive Language). The Cognitive area focuses on a child's memory, conceptual and reasoning, and academic skills. For more information about the BDI, see Appendix A.

The initial developmental status or strengths and needs of the children were very different across handicap groups as Figures 2.2 through 2.6. illustrate. The children in the Language-Impaired group, who were a mean age of 43 months at pretest, were delayed six months or more on all areas of the BDI except Fine Motor. However, as Figure 2.2 shows, they were most delayed in the Receptive and Expressive Language areas.

FIGURE 2.2

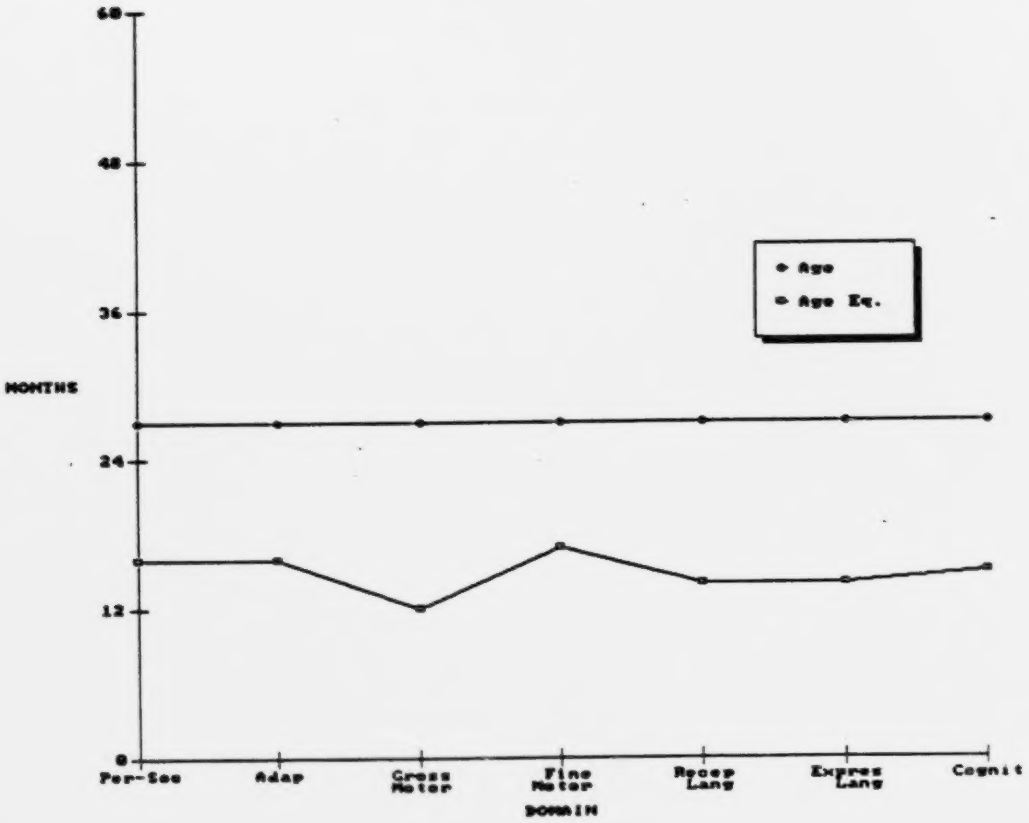
Pretest Scores vs. Age
Language-Impaired Group (N = 262)



The children classified as Multihandicapped were a mean age of 27 months and were more than six months delayed on all areas of the BDI. These were children who, by definition, had educational needs in several areas. As Figure 2.3 illustrates, the most delayed area on the BDI for these children at the time of pretest was Gross Motor.

FIGURE 2.3

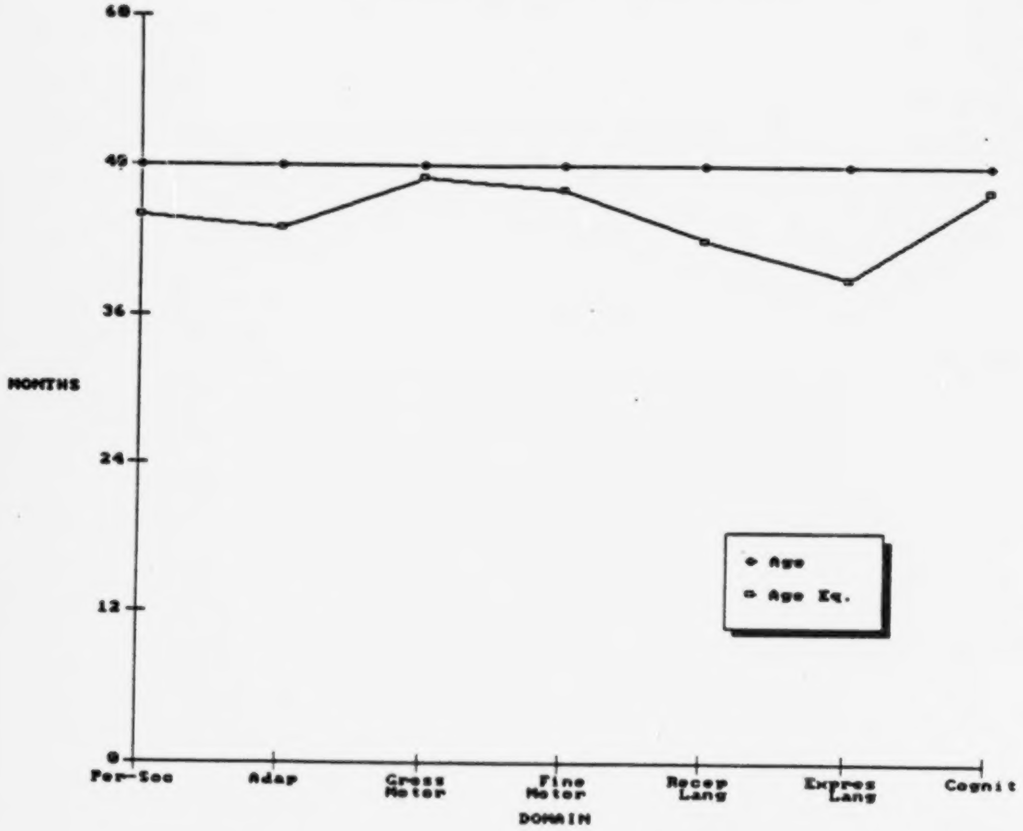
Pretest Scores vs. Age
Multihandicapped Group (N - 162)



With a mean age of 48 months at pretest, the children in the Speech-Impaired Group were the oldest in the sample. These children had delays of six months or more only in the Receptive and Expressive Language areas of the BDI, as Figure 2.4 indicates. According to the BDI, the area most delayed at the time of placement was Expressive Language. It should be noted that the BDI does not have specific measures of speech articulation or fluency which were the primary deficits of children in this handicap group.

FIGURE 2.4

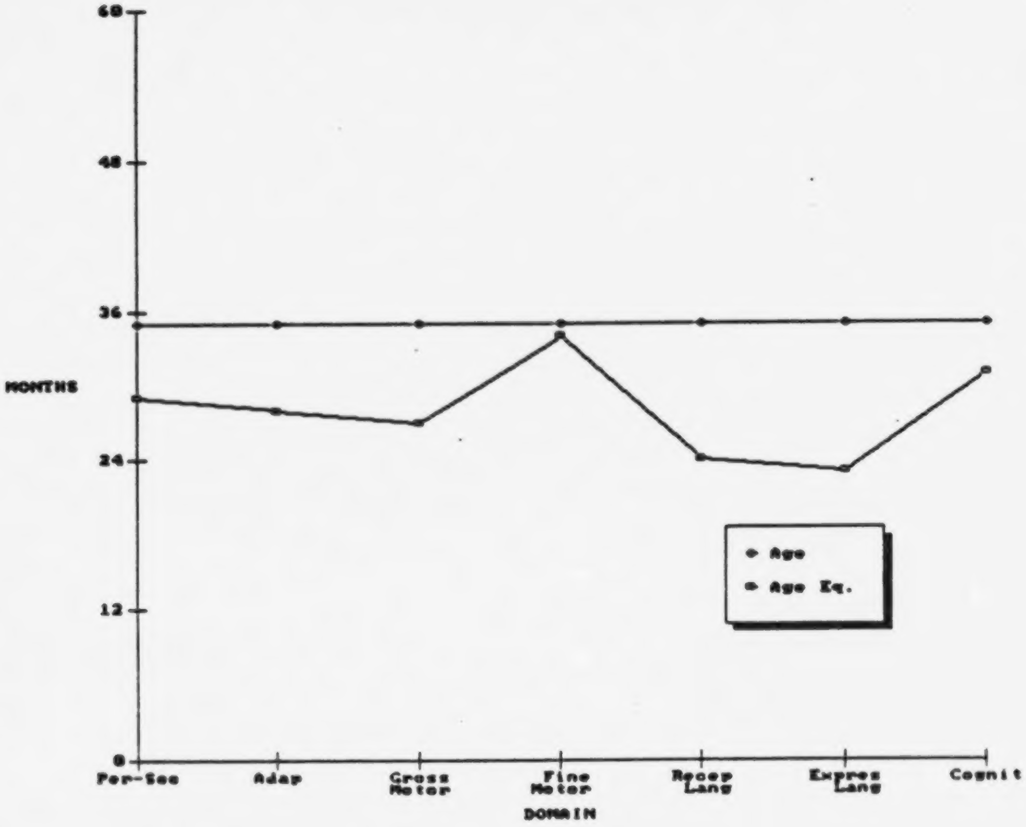
Pretest Scores vs. Age
Speech-Impaired Group (N = 139)



The children initially classified as Hearing Impaired were a mean age of 35 months at pretest. They exhibited delays of six months or more in all areas of the BDI except Fine Motor and Cognitive at the time of pretest. As illustrated in Figure 2.5, the areas of the BDI most delayed were Receptive and Expressive Language.

FIGURE 2.5

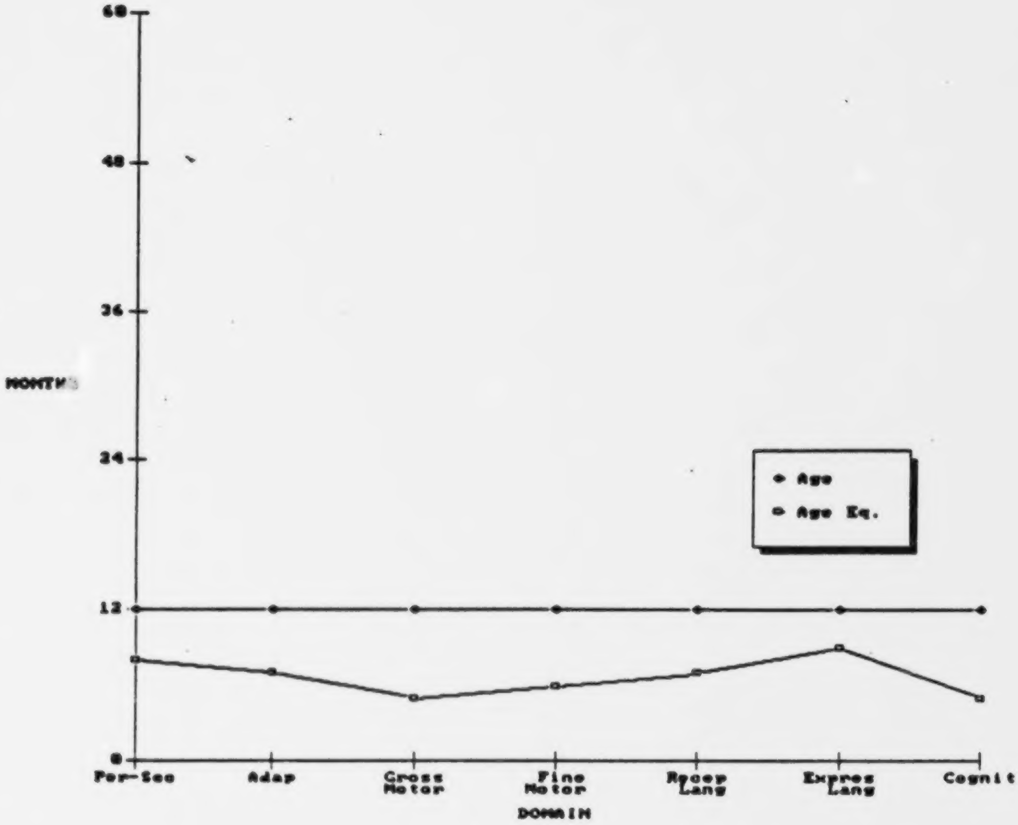
Pretest Scores vs. Age
Hearing-Impaired Group (N = 30)



The smallest (N - 27) and youngest (mean age of 12 months) group of children were those with a handicapping classification of Vision Impaired at the time of pretest. Figure 2.6 illustrates that these children were six months or more delayed in all areas of the BDI except Personal-Social, Adaptive, and Expressive Language. One of the strengths of these children appeared to be the emergence of early expressive language skills.

FIGURE 2.6

Pretest Scores vs. Age
Vision-Impaired Group (N - 27)



Medical Problems. Review of records on 93 percent of the sample showed that the children had a variety of medical problems. By far the most frequently reported problem was otitis media (middle ear infection), and a small but notable percentage were born prematurely. Medical problems reported on at least 5 percent of the records are shown in Table 2.2. The percentages for hearing and vision problems are high because any indication of these problems was coded, including a temporary hearing loss due to otitis media or nearsightedness. The items were coded for the absence or presence of a problem indicated in the records. The percentage indicates the minimum proportion of children in the study with such a problem. The true percentage may actually be higher because the records often had no reference to either the absence or presence of a specific medical condition.

TABLE 2.2
Most Frequently Reported Medical Problems
(N=604)

Medical Problem	Percentage
Otitis Media	43
Muscle Tone Problems	22
Hearing Loss	20
Vision Impairment	15
Allergies	13
Prematurity	10
Jaundice	10
Breathing Problems at Birth	6
Seizures	5
Heart Problems	5
Upper Respiratory Infections	5

Previous Special Education Services. One fourth of the children received short-term special education services (less than six months) other than evaluation prior to official MCPS placement. These children were not dropped from the study for two reasons: 1) services received from MCPS prior to official placement were primarily monitoring services provided through periodic contacts with parents, and 2) information about the services children received outside MCPS was vague; and it was impossible to determine the frequency of provision and if the services were medical or educational in nature.

Profile of First Year Special Education Services. The children received special education services in a classroom, at home, or on an itinerant basis. Related therapy services were provided as part of the classroom or home program, or a child may have received only therapy services. More than half of the children in the study were in a classroom program their first year, as shown in Table 2.3. This was either a general preschool special education class, a speech/language class, a vision class, or a hearing class. A very small number of the children received services at home.

Overall, the most common type of special education was speech/language therapy. More than three quarters of the children received this service during their first year of special education. Less than a quarter received occupational therapy or physical therapy. A very small number received itinerant vision or hearing services.

TABLE 2.3
Percentage of Children Receiving Various Services
Their First Year Within Each Initial Handicap Group

Handicap Group	N	Classroom Program[a]	Home Services[b]	Sp/Lang Therapy[c]	Occup. Therapy[c]	Physical Therapy[c]
Language	263	54	-	86	14	2
Speech	142	4	-	92	-	-
Multiple	163	98	2	70	51	52
Hearing	30	97	-	53	3	-
Vision	27	44	30	22	26	33
Other	21	76	5	81	-	5
Total	646	56	2	78	20	16

[a] "Classroom Program" includes general special education, language, vision or auditory classroom.

[b] "Home Services" includes any services received at home.

[c] Itinerant services--These data were missing for some children in private programs; therefore, the percentages may be low. Also, children on a monitoring status only were not included in these percentages.

The first-year service profiles were different for each handicap group, as shown in Table 2.3. About half of the children in the Language-Impaired group were in a classroom program, and most received speech/language therapy. Speech/language therapy may have been received one-to-one or in a small group, and this could have been in addition to a classroom program. A small percentage received occupational and physical therapy as well. In contrast, almost all of the children in the Speech-Impaired group received speech/language therapy, and only a small percentage were in a classroom program.

The first-year service profile of the children in the Multihandicap group was reflective of their multiple needs. Almost all of the children were in a classroom program, and the others were served at home. More than half received speech/language, occupational, and/or physical therapy. A small percentage also received vision or auditory services.

Almost all of the children in the Hearing-Impaired group were in a classroom program their first year of services. About half received speech/language therapy, and a very small number also received occupational therapy. Close to one-third of the children in the Vision-Impaired group were served at home their first year, and under half were in a classroom program. These children were the youngest at the time of pretest (mean age of 12 months), which could explain the relatively high percentage of home-based services. Some of the children in the Vision-Impaired group received speech/language, occupational, or physical therapy as well.

Family Characteristics at the Time of Placement

Family Composition and Home Language. Most of the children were living with two parents (natural, step, or adoptive), which was the case for Montgomery County as a whole. Almost a quarter of the children had no siblings. A few children had a twin or triplet sibling. The mean number of children in the family was 2.4 (S.D. = 1.1). English was the only language spoken in the home for 88 percent of the children, a figure similar to Montgomery County as a whole. The other children were from homes which were bilingual or monolingual non-English-speaking.

TABLE 2.4
Percentage Distribution of Sample and
Montgomery County Population on Selected Family Variables

Variable	Sample	Montgomery Co.
Parents in Household (N=588)		
Two Parents	81	84
One Parent	13	12
Other	6	4
Number of Children in Family (N=575)		
1	23	*
2	43	*
3	22	*
4 or more	12	*
Home Language (N=589)		
English Only	88	86
Bilingual or Monolingual Non-English	12	14

Note. Montgomery County Data were taken from the 1980 Census.

* No data available.

Parents' Education. More than half of the mothers and fathers had some college education. The mean number of years of education for mothers was 14.1 (S.D. - 2.7) and 15.0 (S.D. - 3.3) for fathers. Data from Montgomery County as a whole show a similar distribution of years of education for adults 25 years old and older, as shown in Table 2.5. Parental education was missing from about half of the records, which precludes definitive statements about parental education level.

TABLE 2.5
Percentage Distribution of Sample and
Montgomery County Adults on Parent's Education

Education Level	Mothers (N-312)	Fathers (N-277)	Montgomery Co. Adults
Less than 12 years	9	10	13
High school graduate	29	18	25
Some college	25	24	19
College graduate or beyond	37	48	43

Note. Montgomery County data were taken from the 1980 Census and include 361,446 persons 25 years and older.

Parents' Occupation.[2] Half of the mothers (of those with data) were unemployed at the time their children were placed in special education. The most frequently reported occupation for mothers was clerical/sales. Higher executive and administrative personnel were the most frequently reported occupations for fathers. Occupation data are summarized in Table 2.6. Missing data was as significant a problem for parental occupation as it was for parental education. Mother's occupation was missing in 42 percent of the records and father's occupation in 45 percent. Therefore, the generalizability of these figures to the entire sample of 646 is unknown.

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[2] Occupation was coded using the Hollingshead scale. A.B. Hollingshead (1957 copyright), Two Factor Index of Social Position. Privately printed, 1965, Yale Station, New Haven, Conn.

TABLE 2.6
Percentage Distribution of Sample on Parent's Occupation

Occupation	Mothers (N=350)	Fathers (N=331)
Higher Executive	3	19
Business Manager	9	16
Administrative	5	19
Clerical, Sales	18	11
Skilled Manual	1	16
Machine Operator	11	11
Unskilled	3	3
Unemployed	50	5

Summary

A majority of the children in the project were boys, and almost two-thirds of the sample was between three and five years old at the time of pretest. Three-fourths of the sample was white. The largest group of children was labeled Language Impaired, with the next most common handicap groups being Multihandicapped and Speech Impaired. These three handicap groups comprised most of the sample. In general, the oldest children in the project had either speech or language impairments and were one to two years older than the multihandicapped children. The sample exhibited a diverse array of medical problems and heterogeneous developmental profiles. In general, the children with multiple handicaps had developmental delays in all areas; whereas children in other handicapping groups had more isolated delays.

Most of the children in the project were living with two parents, and about a quarter were the only child in the family. English was the only language spoken in most of the households, but 12 percent of the children came from bilingual or monolingual non-English-speaking homes. The mothers and fathers of the children were generally well educated, with almost half of the fathers and more than a third of the mothers having a college degree or beyond. The family data are comparable to Montgomery County as a whole. Half of the mothers were unemployed at the time their children were placed in special education, and over half of the fathers were in executive, managerial, or administrative positions.

CHAPTER 3

Service Data

The project staff collected attendance data and detailed information on the amount and type of services scheduled and received. The purpose of these data was to determine how much of the prescribed special education the children in the study actually received. The project staff also collected data on program and level of service to examine changes in the nature of the special education over time. In this chapter, attendance data, percentage of services received, and changes in services are discussed.

Program Attendance

Attendance was high and constant during the three years of the project, with mean days of attendance being close to 90 percent. As shown in Table 3.1, attendance patterns for children in most of the handicap groups were similar to those observed in the total sample. Children in the Multihandicapped group had slightly lower attendance each of the three years of the project, and year three children in the Hearing-Impaired group had a mean attendance rate eight points lower than the total sample. Analysis of 1986 attendance data by age indicated that attendance improved as children got older. Children up to three years by June 1986 had a mean attendance of 82 percent; three- to five-year-olds, 85 percent; and five- to seven-year-olds, 91 percent.

It should be noted that these figures may be a slight overestimate because obtaining attendance data for some children was a significant problem. For this reason, attendance data were analyzed by program type and level, as displayed in Table 3.2. In many schools, accurate attendance data were not kept on preschoolers who received only Level 1 or 2 speech/language therapy. A detailed discussion of missing and inaccurate attendance data can be found in Appendix A. Overall, attendance data were most complete for Year Three. However, even that year, more that a quarter of the data were missing for pre-schoolage children receiving itinerant speech/language services, and computer-generated attendance labels could not be located for some school-age children.

The high mean attendance rates indicate that, in general, these children were able to get to their program to receive their scheduled services. Given the relatively high frequency of illness among all young children and the high frequency of medical problems among this group of preschoolers, the child's attendance is not a trivial concern. Even though individual children may have shown poor attendance overall, these young handicapped children displayed very good attendance.

TABLE 3.1

Mean Attendance Rates by Handicap Group and Year

	Handicap Group						
School Year	Speech	Language	Multi-Handicap	Hearing	Vision	Other	Total Sample
1983-84							
Mean	.89	.88	.84	.86	--	.83	.87
S.D.	.13	.10	.15	.07	--	.09	.12
N	21	74	33	6	--	4	140
1984-85							
Mean	.91	.87	.85	.88	.88	.90	.88
S.D.	.08	.11	.11	.08	.06	.08	.11
N	41	145	74	9	8	24	301
1985-86							
Mean	.92	.87	.85	.79	.89	.92	.87
S.D.	.08	.10	.14	.13	.05	.06	.12
N	94	171	137	25	11	30	468

TABLE 3.2
Mean Attendance Rates by Program Type

	Total	Missing Data	Attendance	
Program Type	N	%	Mean %	S.D.
1983-84				
Preschool				
Level 1 & 2 Speech/Language				
Non-Head Start	65	75	89	.16
Head Start	29	28	92	.06
Level 4 & 5	131	23	86	.12
School Age				
Level 1, 2 & 3	0	--	--	--
Level 4 & 5	0	--	--	--
1984-85				
Preschool				
Level 1 & 2 Speech/Language				
Non-Head Start	130	65	88	.12
Head Start	35	9	88	.10
Level 4 & 5	266	26	87	.11
School Age				
Level 1, 2 & 3	17	29	94	.04
Level 4 & 5	14	21	93	.05
1985-86				
Preschool				
Level 1 & 2 Speech/Language				
Non-Head Start	98	26	87	.11
Head Start	46	0	91	.06
Level 4 & 5	257	10	84	.13
School Age				
Level 1, 2 & 3	69	3	93	.07
Level 4 & 5	47	6	92	.07

Percentage of Services Received

Procedure. Verification of special services received was conducted at three two-week time points during the second and third years of the study. A detailed discussion of this procedure is presented in Appendix A. The time-sampling procedure was intended to produce reliable estimates for the entire school year. However, analysis of the data showed that insufficient data were collected to produce reliable estimates for individual children. Aggregated data were move reliable.

Classroom Program. Over the two-year period that service verification took place, children in the project received about three-quarters of the classroom program time they were scheduled to receive, as shown in Table 3.3. The attendance figures are higher and probably more accurate because they represent data for an entire year without sampling. Therefore, the service percentages are probably underestimates of amount of services a child received.

Related Services. Percentage of related services received was generally slightly lower than classroom program time received for both years of data collection, as shown in Table 3.3. Receipt of related services is more likely to be reduced by special events and school closings than classroom time because these services are usually offered only one or two times per week. Also, short-term substitutes are not hired for therapists as they are for classroom teachers. The percentage of related services received was greater in 1984-85, with the biggest difference being for physical therapy. It appears that this was due to the fact that during one of the weeks service verification took place in 1985-86, schools were closed part of several days because of heavy snow.

TABLE 3.3
Percentage of Services Received by School Year

Type of Service	School Year 1984-85	 1985-86
Classroom Program	79	73
Occupational Therapy	73	69
Physical Therapy	82	70
Speech/Language Therapy	73	66

Changes in Services

Procedure. As part of MCPS standard procedures, the children in the project had their program placement and level of service (intensity) reviewed 60 days after the Individualized Education Plan (IEP) was written and at the end of each school year (Annual Review) by MCPS school personnel. Changes were made if the review committee felt the child's current program or level were not appropriate. The project collected data on each child's level of service during the three years of the study.

For purposes of analysis, the children were put into two groups according to initial level of service. One group was the children who began special education with low intensity services (i.e., only Level 1 or 2 itinerant speech and/or language therapy). The second group was the children initially placed in high intensity services (i.e., Level 4 or 5 special education program). Each child's service history was reviewed to determine if level of service had been reduced, increased, or remained the same or was mixed (increase/decrease or decrease/increase) over time. Since only a small percentage of children were dismissed from services entirely, these children were classified as "reduction in service."

Initial Low Intensity Placement. Most children who began special education in itinerant speech and/or language therapy had no change in level of service after two years. About a quarter had a reduction and a small number had an increase. However, after three years, less than half of the children stayed at their initial level of service. More children had a reduction than an increase, and a small but notable number had a mixed history. These data are summarized in Table 3.1.

Initial High Intensity Placement. Most children who began special education in a Level 4 or 5 program had no change in their level of service after two or three years, as shown in Table 3.1. However, the percentage of children who had a reduction after three years (24%) was twice the percentage of those who had a reduction after two years (12%). If a child was placed in a high intensity speech/language program he/she was more likely to have a reduction in level of service than if he/she was placed in a high intensity general program.

Twenty-seven percent of the children initially placed in Level 4 or 5 programs under four years of age had a reduction in level of service over a three-year period. In contrast, 17 percent of the children over four years of age at initial placement had a reduction in service intensity.

TABLE 3.1
Summary of Service Histories

Initial Program Placement	Total N	Less %	Same %	More %	Mixed %
Three-Year Service History (N-178)					
Low Intensity	73	29	40	20	11
High Intensity	105	24	75	N/A	1
Two-Year Service History (N-272)					
Low Intensity	106	26	67	7	N/A
High Intensity	166	12	88	N/A	N/A

Note: Three-year service history refers to children who were in the Project for three years. The two-year service history group had two years of data. These two groups are mutually exclusive.

Summary

Overall, attendance in this study appeared to be almost 90 percent, which is quite good since these were young handicapped children prone to illness. However, attendance records for the preschool children were incomplete in many cases, which makes conclusions somewhat tentative. Attendance secretaries complained that procedures were sometimes difficult to apply to preschool level services and/or service providers did not keep careful attendance records for preschoolers.

Detailed examination of services to the children in this study revealed that they received about 76 percent of the classroom program time they were scheduled to receive and slightly less of their scheduled related services. Receipt of related services may have been lower because bad weather or special events may eliminate these services on a given day. Also, short-term substitutes are not hired for therapists, as they are for classroom teachers.

Most children did not have changes in their level of service over a two-or three-year period. But more changes occurred, both reductions and increases, after three years than two. Reduction in level of service was more likely if the child began in a low intensity program than if the child began in a high intensity program. Children placed in low intensity programs had, by definition, less severe handicaps which may have been more easily remediated or remediated more quickly. Also, if a child was placed in a high intensity speech/language program, he/she was more likely to have a reduction in level of service than if he/she was placed in a high intensity general program.

Age at placement may be an important factor in relation to reduction of service level over time for children placed in high intensity special education. The younger at placement, the greater the chance of reduction of service level. This may have been due to increased benefits of special education for children placed at a younger age, which is discussed in more detail in Chapter 4. However, it is also likely that the service level was reduced over time for children placed at a younger age because the initial placement was not ideal for one of the following reasons: 1) assessment and diagnosis of infants and toddlers is less accurate than for older children; 2) there is a wide variation in "normal" development, and some children may be slow or delayed, but not handicapped; and 3) there are fewer placement options for the youngest children which means they may have been placed in a high intensity program because there were no other programs for their age group.

CHAPTER 4

Long-term Growth and Short-term Program Benefits

Background

Developmental test data were analyzed to examine long-term growth and short-term program benefits of these preschool children in special education. The Battelle Developmental Inventory (BDI) was used to assess developmental skills in seven areas prior to the initiation of services and at the end of each school year. A child in Cohort 1 with complete test data was tested four times; a child in Cohort 2, three times; and a child in Cohort 3, twice. Over half (57%) of the children in Cohort 1 have complete test data, 70 percent in Cohort 2, and 85 percent in Cohort 3. These data are presented in Table 4.1.

TABLE 4.1

Number of BDI Tests by Cohort

	% Of Children in Cohort		
Number of Tests Administered	Cohort 1 (N=124)	Cohort 2 (N=251)	Cohort 3 (N=271)
1	5	7	15
2	14	23	85
3	24	70	--
4	57	--	--

As discussed earlier in this report, the primary limitation of the study was that it was not possible to have an unserved control group for purposes of comparing child growth because Maryland mandates special education for all handicapped children from birth. However, a "statistical control group" was created, using a technique called "value-added analysis" (Bryk & Weisberg, 1976; Bryk, Strenio & Weisberg, 1980).[1] This technique determined the "value-added" to a child's growth by the program, above and beyond that which is expected from maturation alone.

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[1] A.S. Bryk, and H.L. Weisberg (1976). "Value-added analysis: A dynamic approach to the estimation of treatment effects." Journal of Educational Statistics, 1(2), 127-155. A.S. Bryk, J.F. Strenio, and H.I. Weisberg (1980). "A method for estimating treatment effects when individuals are growing." Journal of Educational Statistics, 5(1), 5-34.

Since the pretest scores were highly related to the child's age, the age and pretest score were used to estimate a posttest score at a later point in time, say eight or ten months later. This estimate of growth due to maturation was compared to the child's actual growth, and the additional growth was attributed to the effect of the preschool special education. (A detailed discussion of Value-Added Analysis" can be found in Appendix D.) The "maturation estimate" and the "program effect" were translated into monthly rates of growth and standardized so that they may be compared one with another. In addition, monthly growth rate for the normal sample estimated from the publisher's norm tables were plotted.

Unfortunately, the value-added technique can be used only for short-term predictions since projections of two or more years ahead would introduce too much error for samples of young children. Therefore, we can only comment descriptively on the long-term growth data plotted below. The growth and program benefits are discussed separately for each handicap group because the children in the study were a very heterogeneous group.

Findings

Language Impaired. Figures 4.1A and B show the developmental progress of these children compared to the test publisher's age norms in the seven areas measured with the BDI. In these and subsequent figures, the dark line shows the scores of the normal sample assessed by the test publisher; and the lighter line charts the growth of the children in our study. (Since groups were combined across the three-year study, the data points for successively later ages are plotted with successively fewer cases.)

These figures show, first of all, that the Language-Impaired group was developmentally delayed in almost all areas at the time of pretest. Over time, they grew at roughly the same rate as the norm group; and except for the gross motor area, they did not close the gap with the age norms. If anything, there may have been a slight decline relative to the age norms in most areas by six years of age.

The Language-Impaired group showed short-term program benefits in all areas as shown in Figure 4.2, and the "program effect" was in several areas almost equal in size to our estimate for the simple growth prediction. (Note particularly the personal-social and the adaptive scores.) In other words, the children's program participation almost doubled their monthly growth rate over what we would expect from maturation alone. Figure 4.2 also shows that the short-term growth rate for these children was close to the norm group's in most areas of development. Where the short-term growth rate for these children exceeded the norm group's, it did so largely by virtue of the special program benefits.

FIGURE 4.1A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Language Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

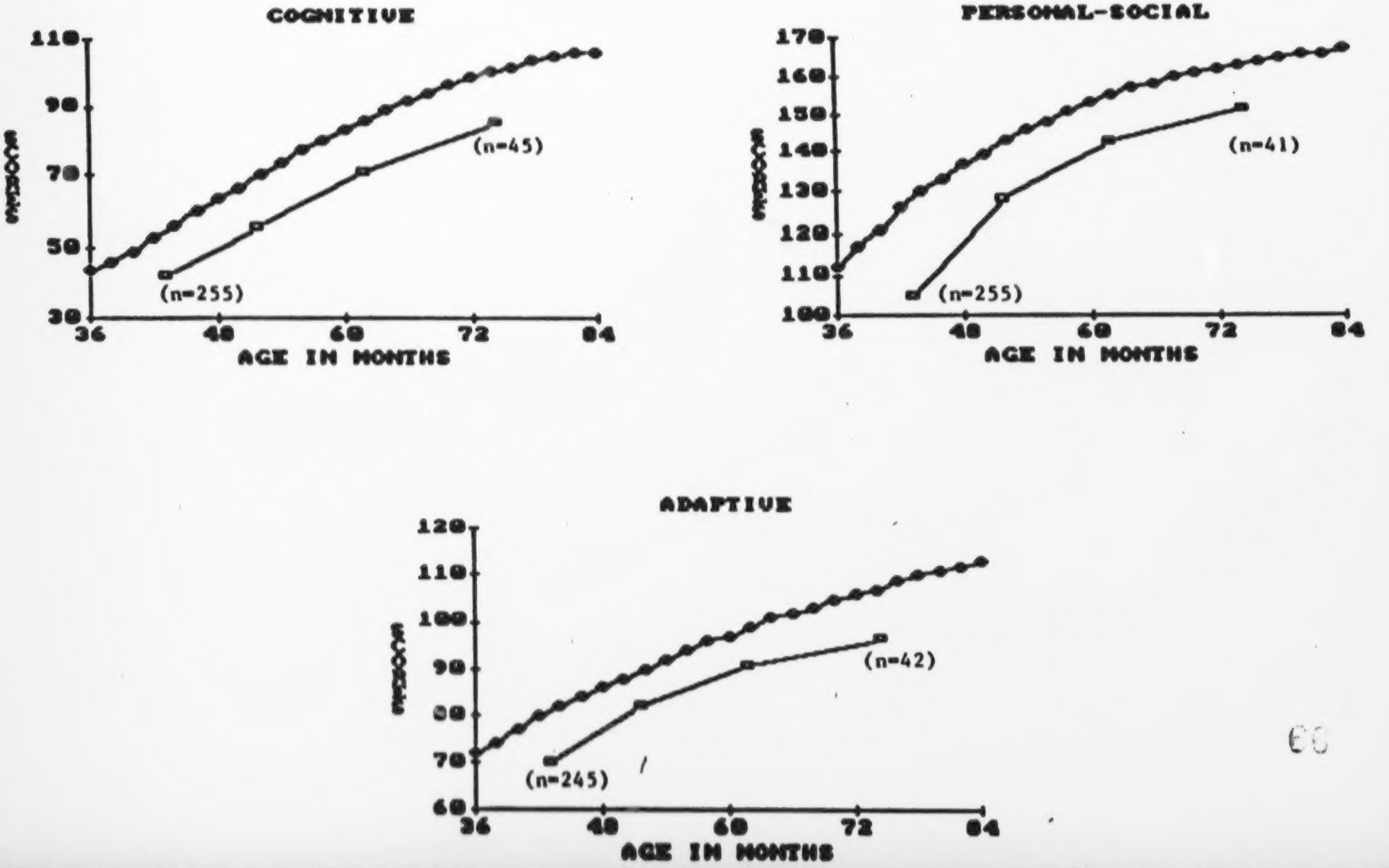


FIGURE 4.1B

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Language Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

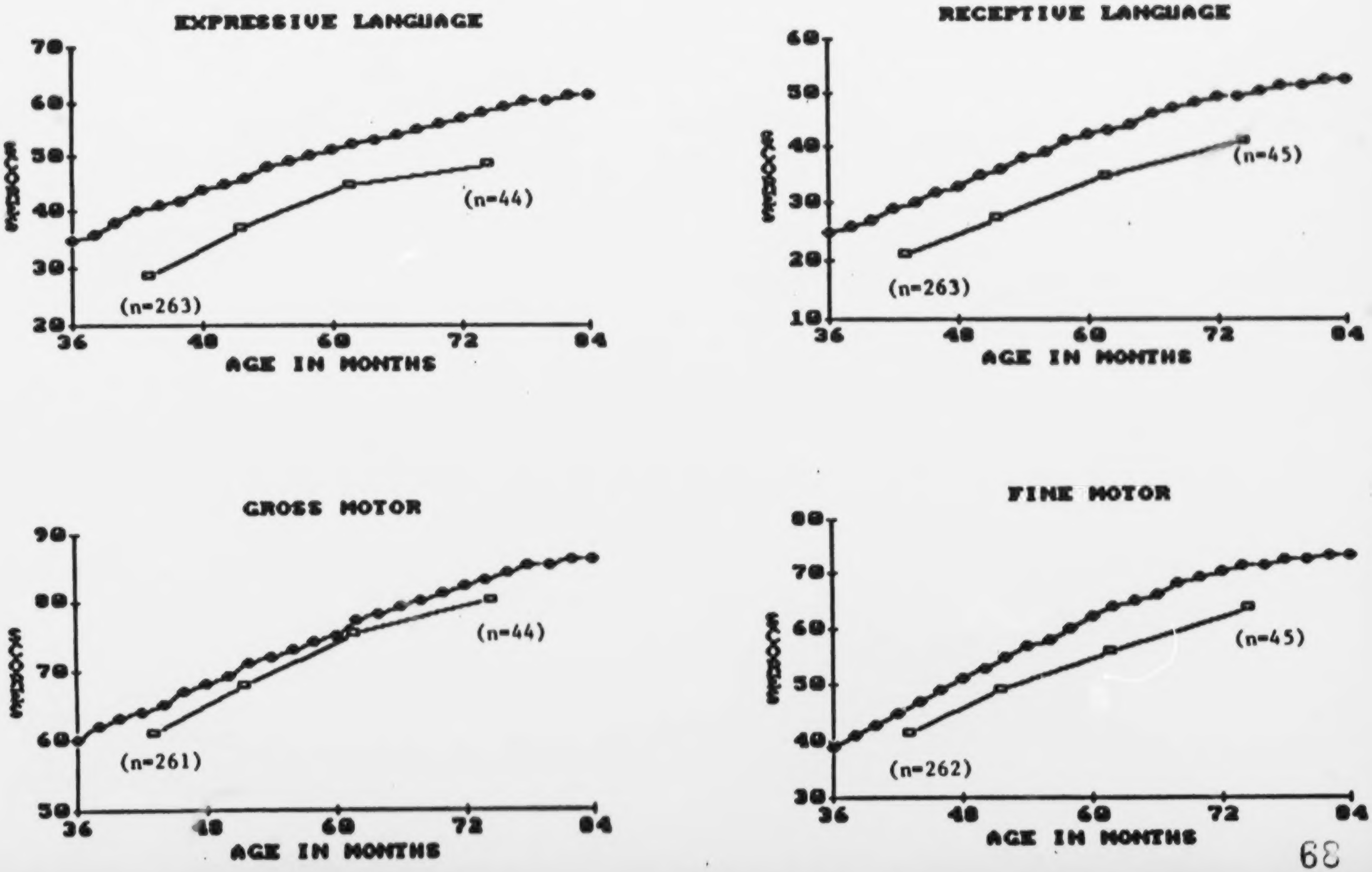
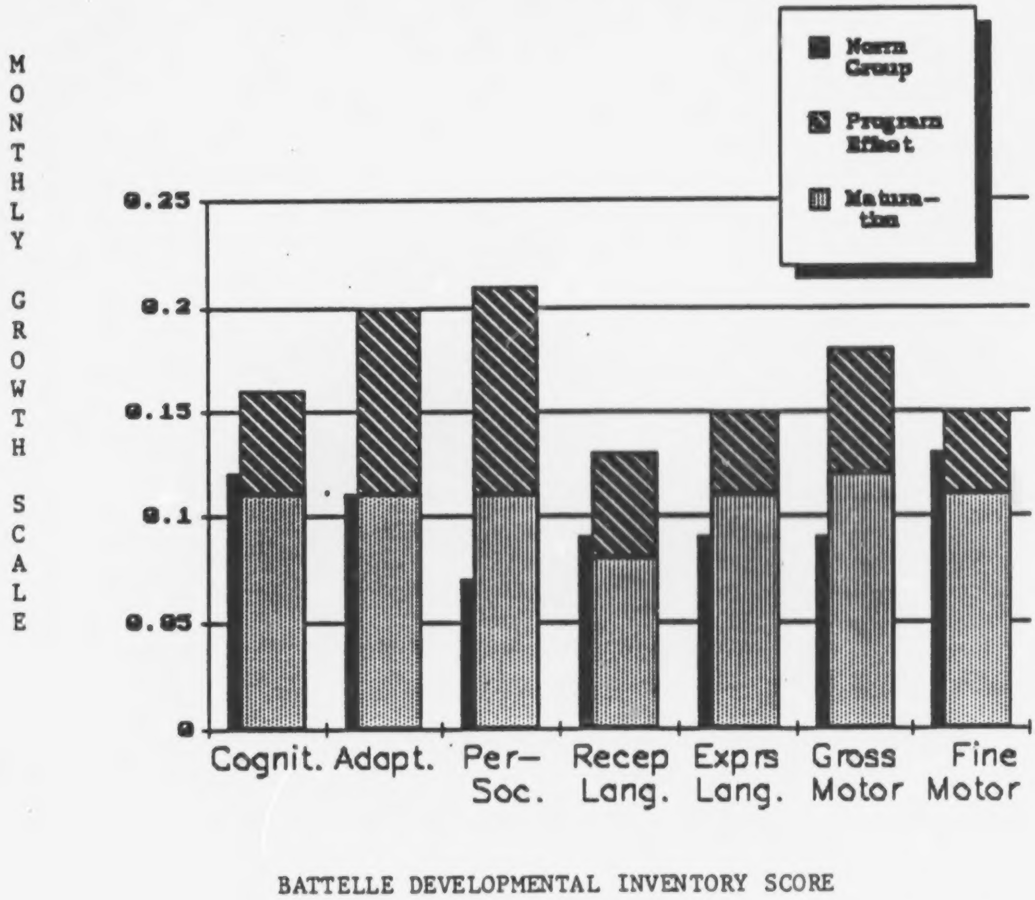


FIGURE 4.2

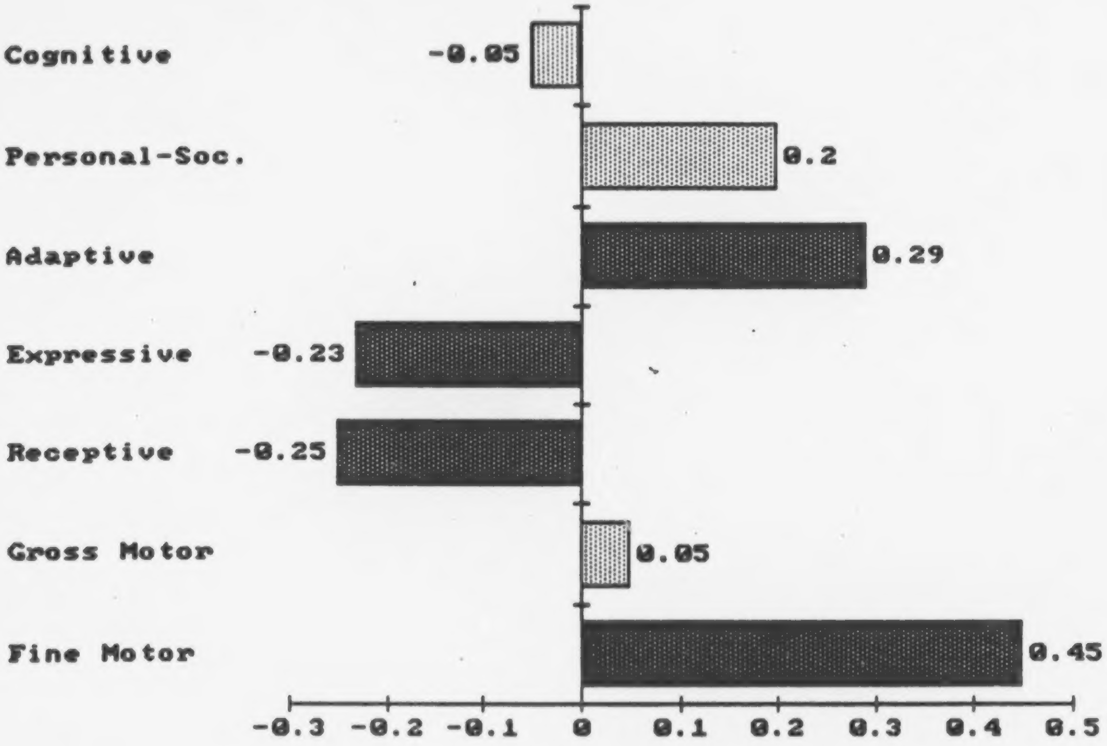
Monthly Growth Rates Due to Short-term Program Benefits and Maturation Compared to Age Norms for the Language-Impaired Group



Also important, the services provided to the children in the Language-Impaired group were more effective when they reached the children at a younger age. The correlation between age and program benefit in the receptive language area, for example, was -.25. That is, the younger the child, the higher the program benefit. Other relationships between program benefits and child's age are shown below in Figure 4.3. These results came from a regression analysis which determined the relationship of age with program benefits in each of the BDI areas apart from any differences due to sex, race, or developmental level on the other BDI scores. The same analysis indicated no association between sex or race and short-term program effects.

FIGURE 4.3

Correlation Between Short-term Program Effects and a
Child's Age at Pretest for Seven Developmental Areas
Language-Impaired Group



NOTE: Correlations are expressed as standardized regression coefficients in a regression model with age, sex, race, and all seven BDI pretest scores; N = 148. The darker bars indicate correlations statistically significant at or below the .10 probability level.

Multihandicapped. Figures 4.4A and B below shows the developmental levels and long-term growth of the children in the Multihandicapped group compared to the age norms. They scored well below the age norms in all areas; and although their early short-term growth rates may have been close to normal, after two and three years they fell farther behind the age norms in all areas. It is important to note here that the fourth points on each figure represent many fewer cases than the earlier points because only a small number of children were in the study for the full three years. The children who entered the study in the first year were younger and had generally had lower skills than children who entered the study later. Consequently, the fourth point on the figures is low.

FIGURE 4.4A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Multihandicapped Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

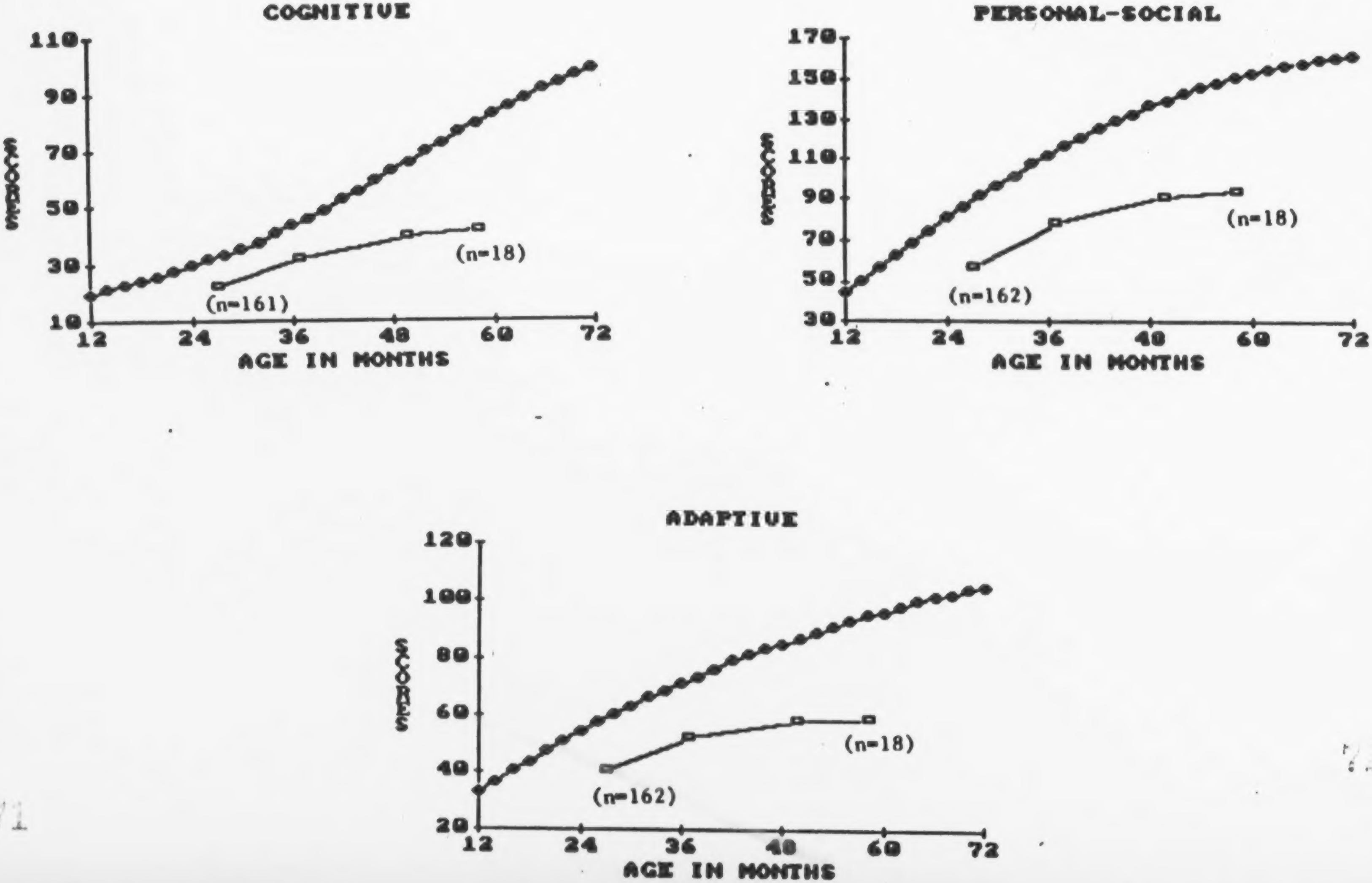
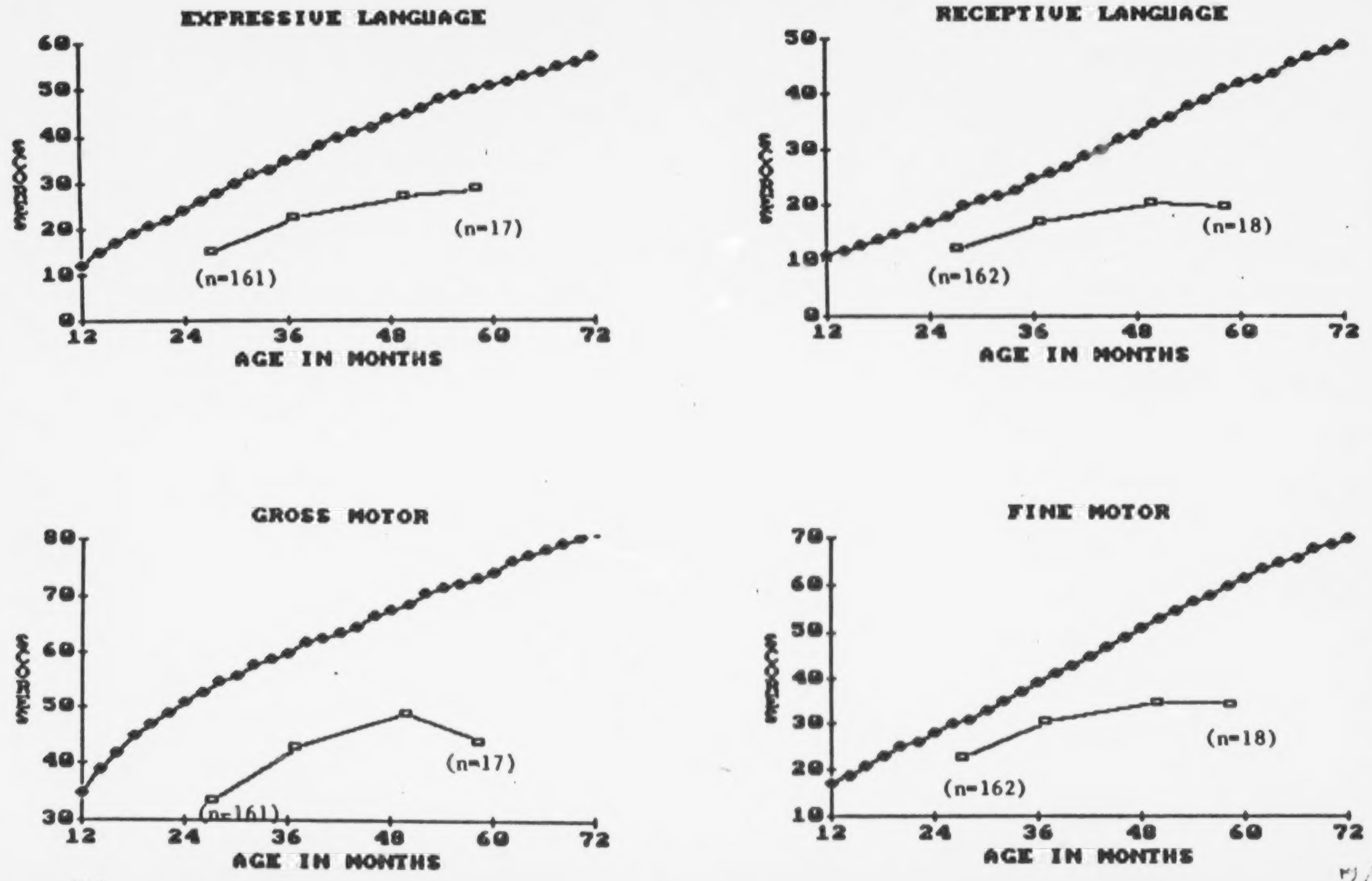


FIGURE 4.4B

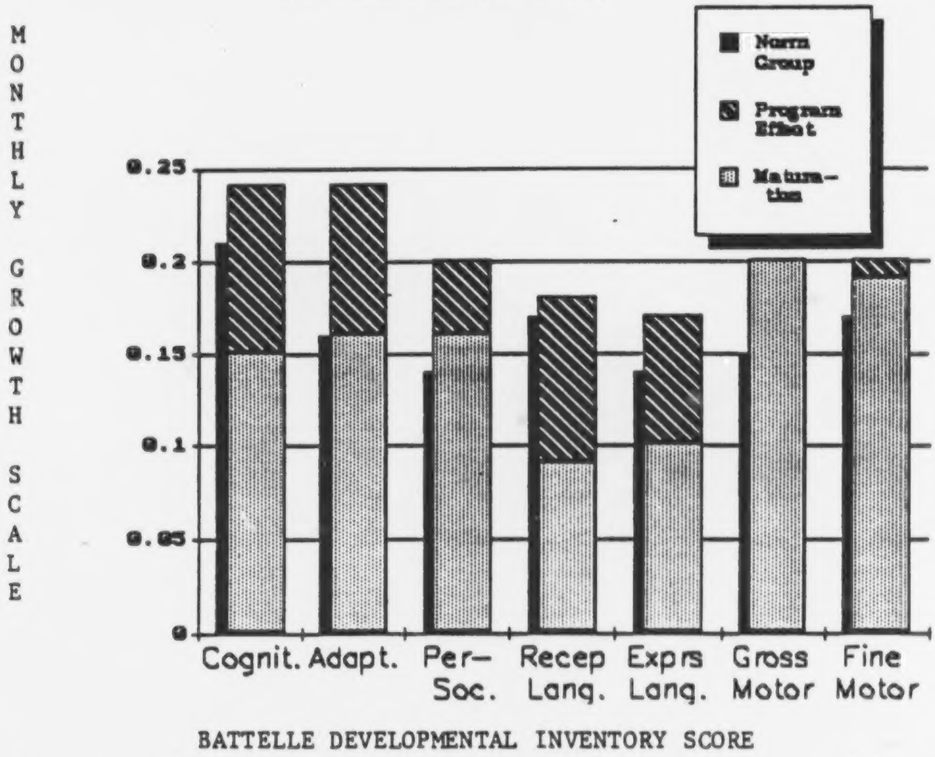
Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Multihandicapped Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)



The children in the Multihandicapped group received short-term benefits from the special education services in all areas except motor, as shown in Figure 4.5. Their expected monthly growth rates in the crucial cognitive and language areas were, not surprisingly, below the norm group's growth rate. Yet, in those areas, the services boosted their monthly growth rates to near-normal levels. They also derived program benefits in the personal-social and adaptive areas. The BDI does not directly evaluate muscle tone and symmetry, which are important components of the motor intervention for many of these children. Therefore, the study may not have documented program benefits in the motor area, even if they existed.

FIGURE 4.5

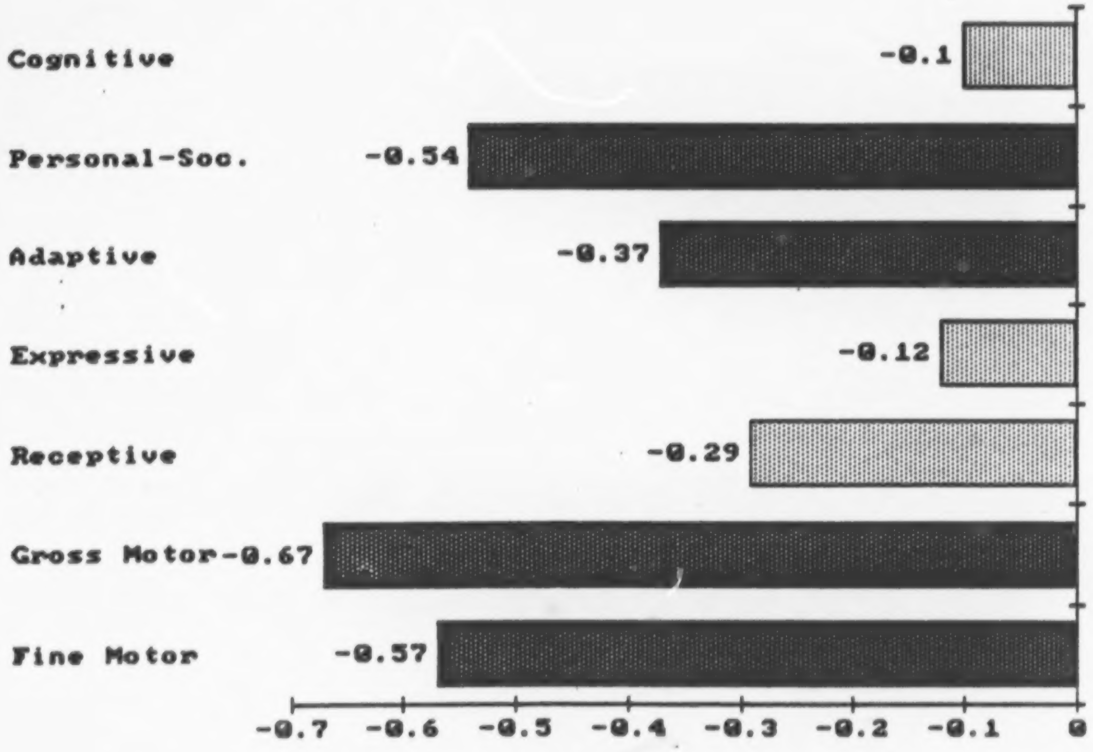
Monthly Growth Rates Due to Short-term Program Benefits and Maturation Compared to Age Norms for the Multihandicapped Group



As was the case with the language-impaired children, those with multi-handicaps, who received services at an earlier age tended to benefit more over the short term. Figure 4.6 illustrates the significant negative correlations between a child's age and short-term program benefits in the personal-social, adaptive, and motor areas. Also important, but not shown in this figure, are the positive correlations of adaptive and expressive language skills with short-term program effects in the cognitive and personal-social areas. This is evidence that the multihandicapped child's skills in the adaptive and language areas helped the child to respond successfully to the special services. In other words, strengths in some areas helped the multihandicapped child to overcome weaknesses in other areas. (These correlations ran between .60 and .80.)

FIGURE 4.6

Correlations Between Short-term Program Effects and a Child's Age at Pretest for Seven Developmental Areas Multihandicapped Group



NOTE: Correlations are expressed as standardized regression coefficients in a regression model with age, sex, race, and all seven BDI pretest scores; N = 115. The darker bars indicate correlations statistically significant at or below the .10 probability level.

Speech Impaired. The children in the Speech-Impaired group had near-normal skill levels at pretest and throughout the three-year study in all areas of the BDI except receptive and expressive language. This is illustrated in Figures 4.7A and B. Their observed growth rate between the ages of four and seven years matched or even slightly exceed that of the test publisher's norm group so that in several areas they tended to get closer to the age norms. It should be noted that the BDI does not have specific measures of speech articulation or fluency which were primary deficits of the children in this handicap group.

FIGURE 4.7A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Speech-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

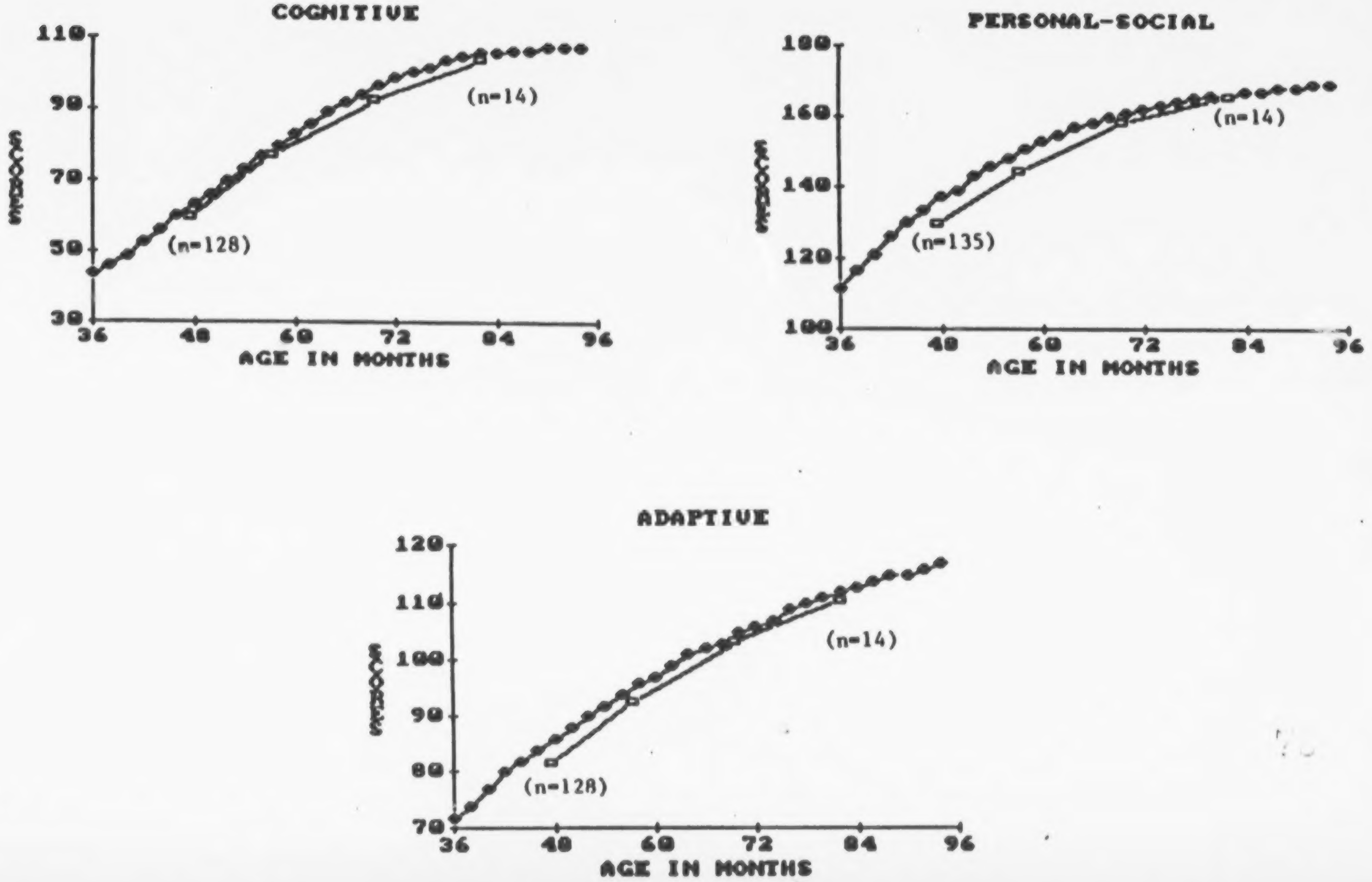
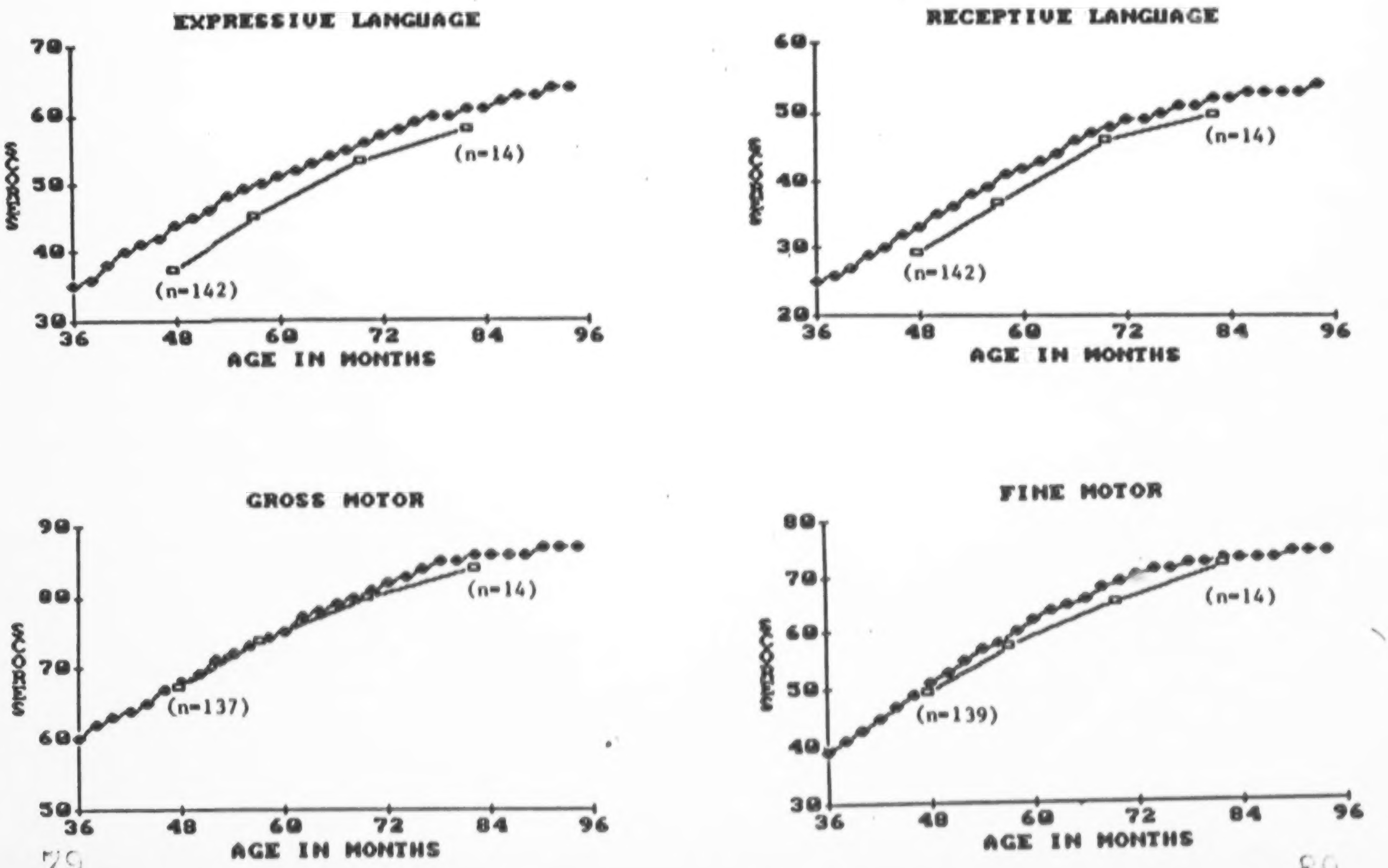


Figure 4.7B

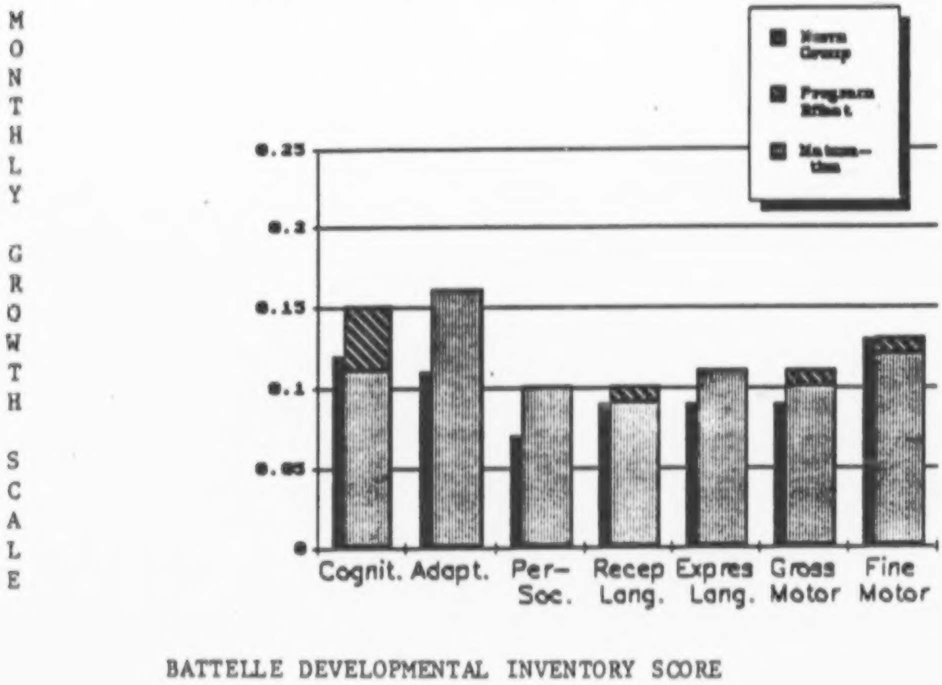
Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Speech-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)



A short-term benefit was found for the Speech-Impaired group only in the cognitive area, as shown below in Figure 4.8. In all other areas, this group grew at about the same rate or slightly faster than the norm group, but they showed no specific program benefits. As noted previously, most children in this handicap group received therapy for speech articulation or fluency problems only, but the BDI does not cover these specific communication areas. Therefore, it was not possible to document program benefits, even if they existed.

FIGURE 4.8

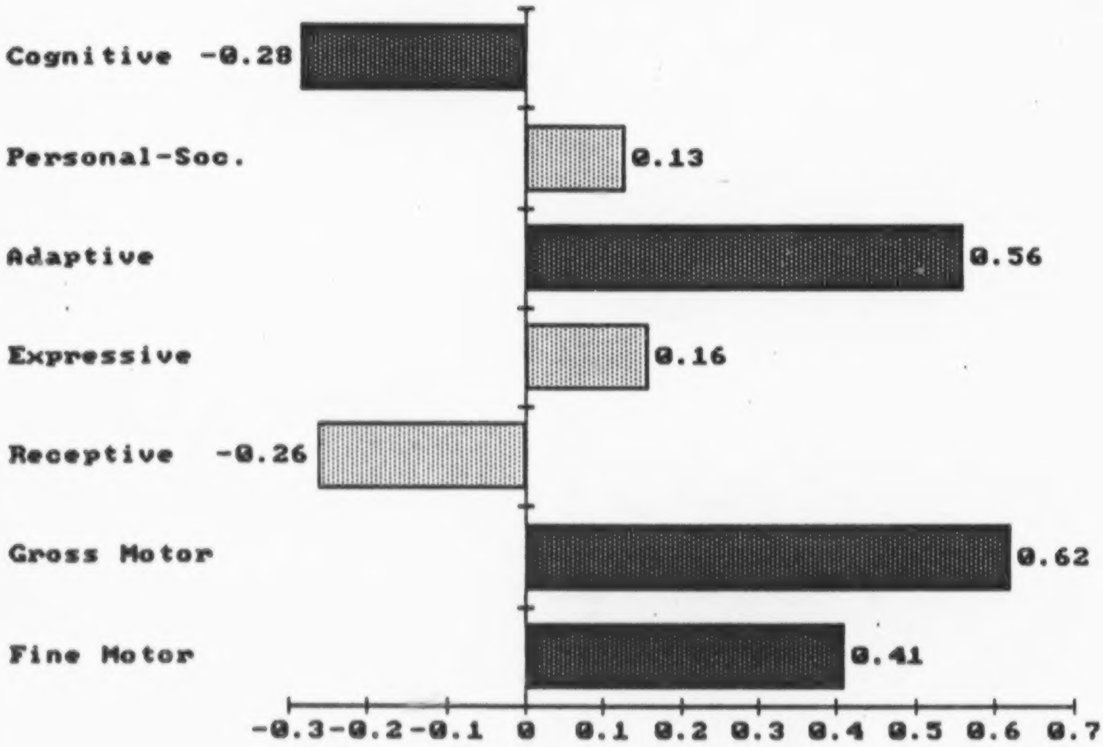
Monthly Growth Rates Due to Short-term Program Benefits and Maturation Compared to Age Norms for the Speech-Impaired Group



In the cognitive area where a short-term program benefit was observed, as with the other two groups, a tendency was found for the younger children to respond to the program with a higher monthly growth rate, as shown below in Figure 4.9 [correlation is -.28.] However, unlike the Multihandicapped group, the younger children in this group did not show higher short-term program gains in all areas. Rather, the older children tended to show faster monthly growth rates in the adaptive, gross motor, and fine motor areas, as noted below in Figure 4.9. In this respect, the speech-impaired children (a more normally developing group) resembled the language-impaired children (also a more normally developing group than the multihandicapped). Thus, while special preschool services tended to provide more help to the younger children, such a program-age relationship was not consistent across all developmental areas for all handicap groups.

FIGURE 4.9

Correlation Between Short-term Program Effects and a Child's Age at Pretest for Seven Developmental Areas Speech-Impaired Group



NOTE: Correlations are expressed as standardized regression coefficients in a regression model with age, sex, race, and all seven BDI pretest scores; N = 75. The darker bars indicate correlations statistically significant at or below the .10 probability level.

Hearing Impaired. Due to the small number of children (30) in the hearing-impaired group, sufficient longitudinal data were available only for the first three testing points rather than the four data points plotted for the handicap groups presented above. In addition, the small sample precluded any analysis of short-term program gains. The data in Figures 4.10A and B show that these children were near normal in the cognitive and fine motor areas at pretest and slightly more delayed in the language, personal-social, gross motor, and adaptive areas. Over a two-year period, these children appeared to progress at a rate somewhat slower than the children in the norm sample.

FIGURE 4.10A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Hearing-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

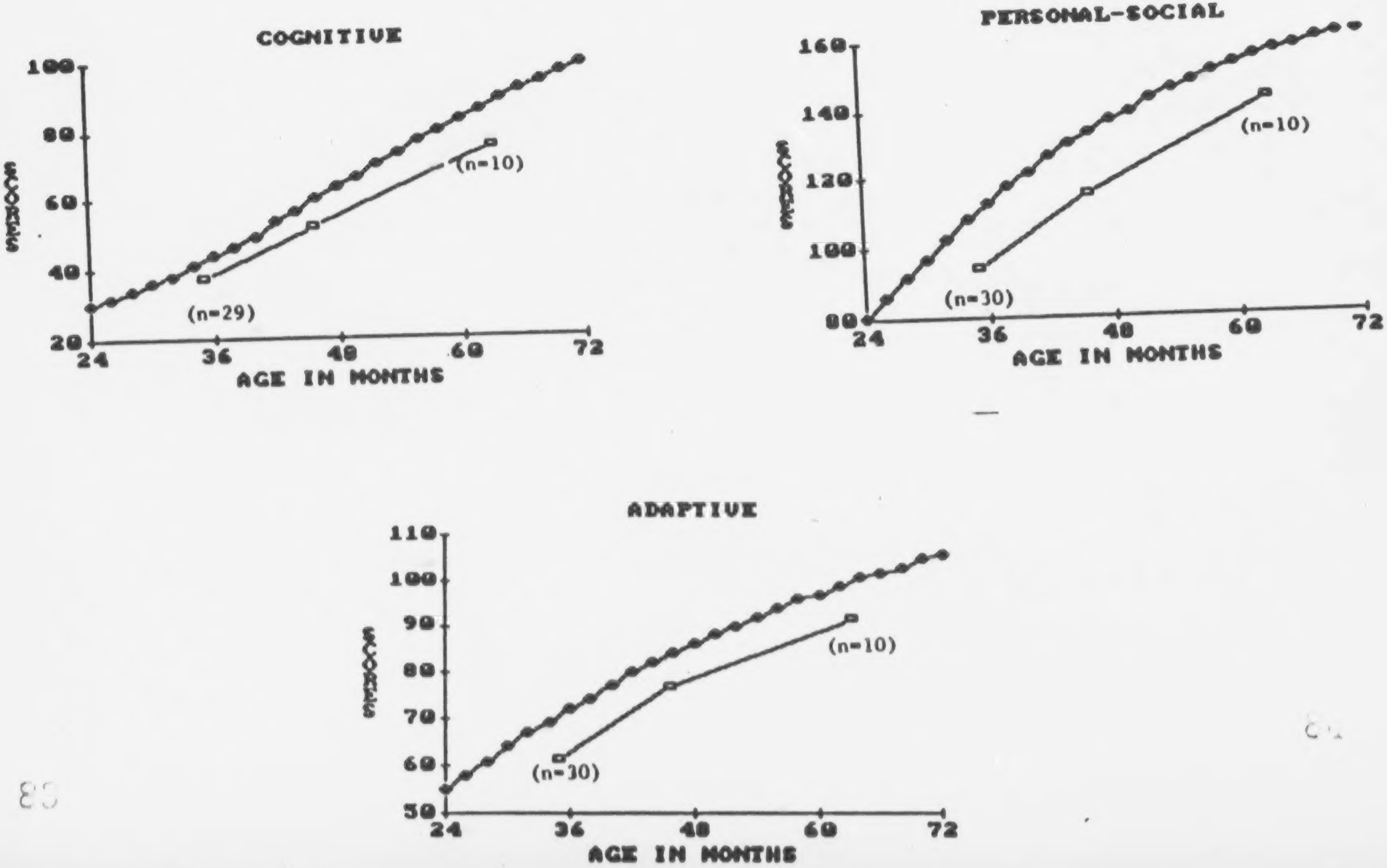
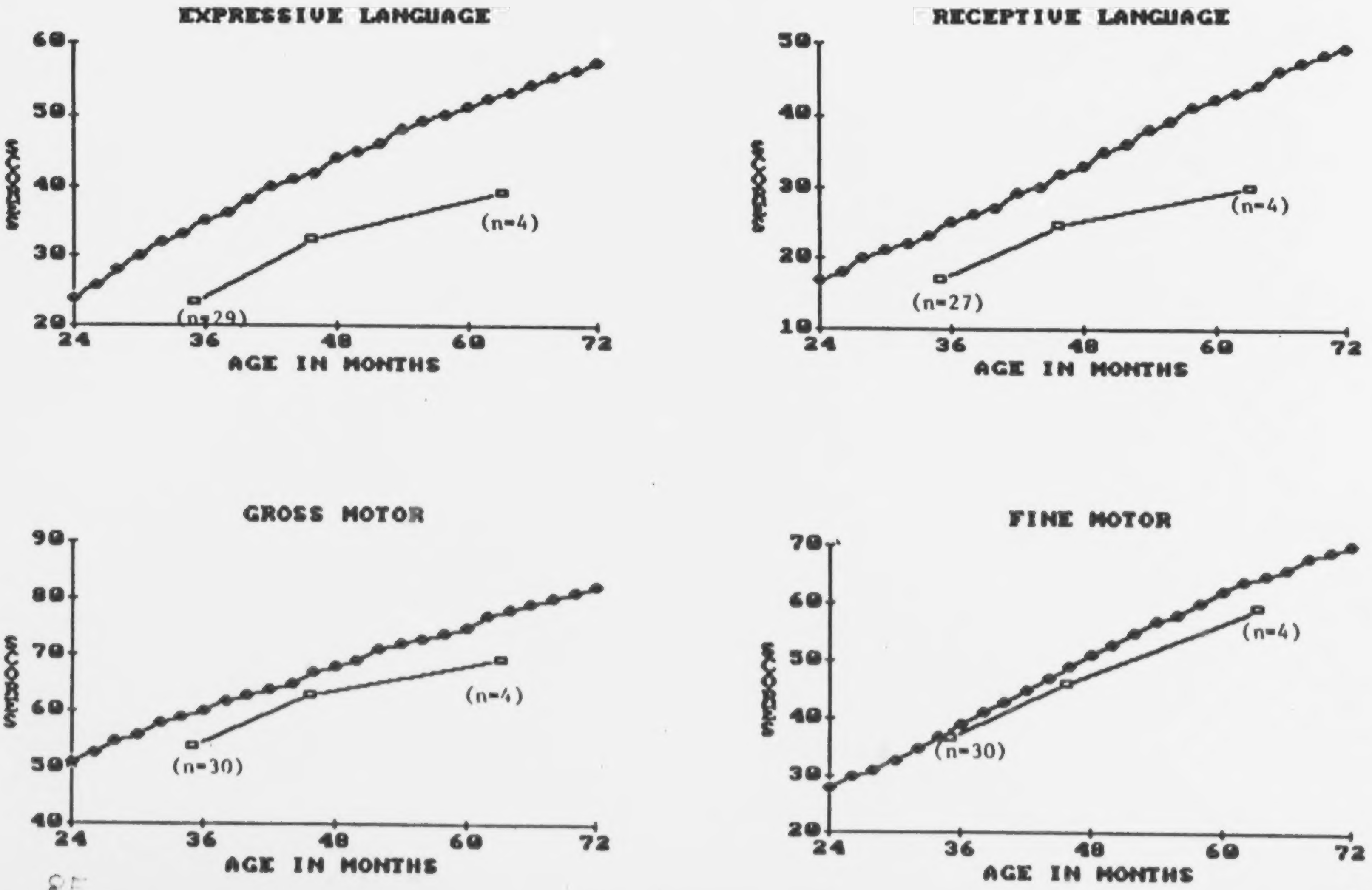


FIGURE 4.10B

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Hearing-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)



Vision Impaired. At the time of pretest, the children in the Vision-Impaired group had near-normal skills in the personal-social, adaptive, and language areas of the BDI, as shown below in Figure 4.11A and B. Their cognitive and motor functioning was somewhat delayed. However, over the two-year period, they developed slower than the norm group. The small number of cases in this handicap group (27) does not allow for description of growth beyond the third data point nor short-term analyses of program benefits. As with the hearing-impaired group, fuller conclusions require the accumulation of many more cases.

Summary

This longitudinal study showed that children who received preschool special education services made significant developmental gains. Moreover, preschool services appeared to produce greater short-term benefits when they reached the children at a younger age, particularly for children with multiple handicaps. These benefits and their relationship with age vary, however, across different developmental areas and across handicap groups. For example:

- The Language-Impaired group almost doubled their short-term growth rates in the adaptive and personal-social areas over the maturational growth rates predicted for them without special services. This group also showed short-term program benefits in all other areas measured, but to a lesser degree. The younger children showed more program benefits in the language areas than did the older children.
- The Multihandicapped group showed significantly increased short-term growth rates due to the special preschool programs in the cognitive, adaptive, and language areas. Also, younger children tended to show greater program benefits in all areas. In addition, data suggest that multihandicapped children may be able to use their strengths in the cognitive and adaptive areas to help them get more benefit from the special services in other developmental areas.
- The Speech-Impaired group showed short-term program benefits in the cognitive area, and the younger children in this group showed the most positive effects in this area.
- Short-term program effects could not be determined for the Hearing- and Vision-Impaired groups since the numbers of children were too few.

Figure 4.11A

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Vision-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)

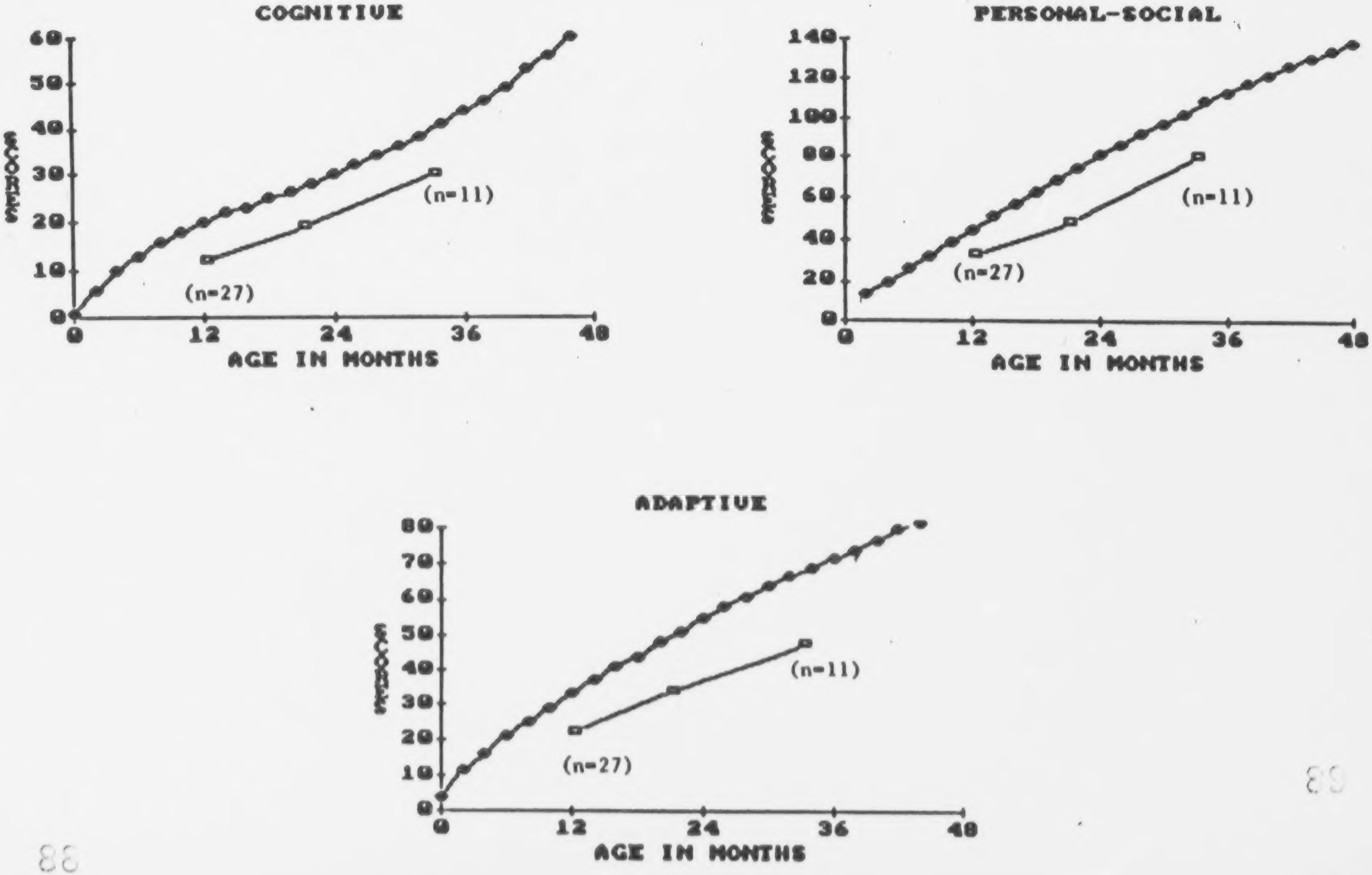
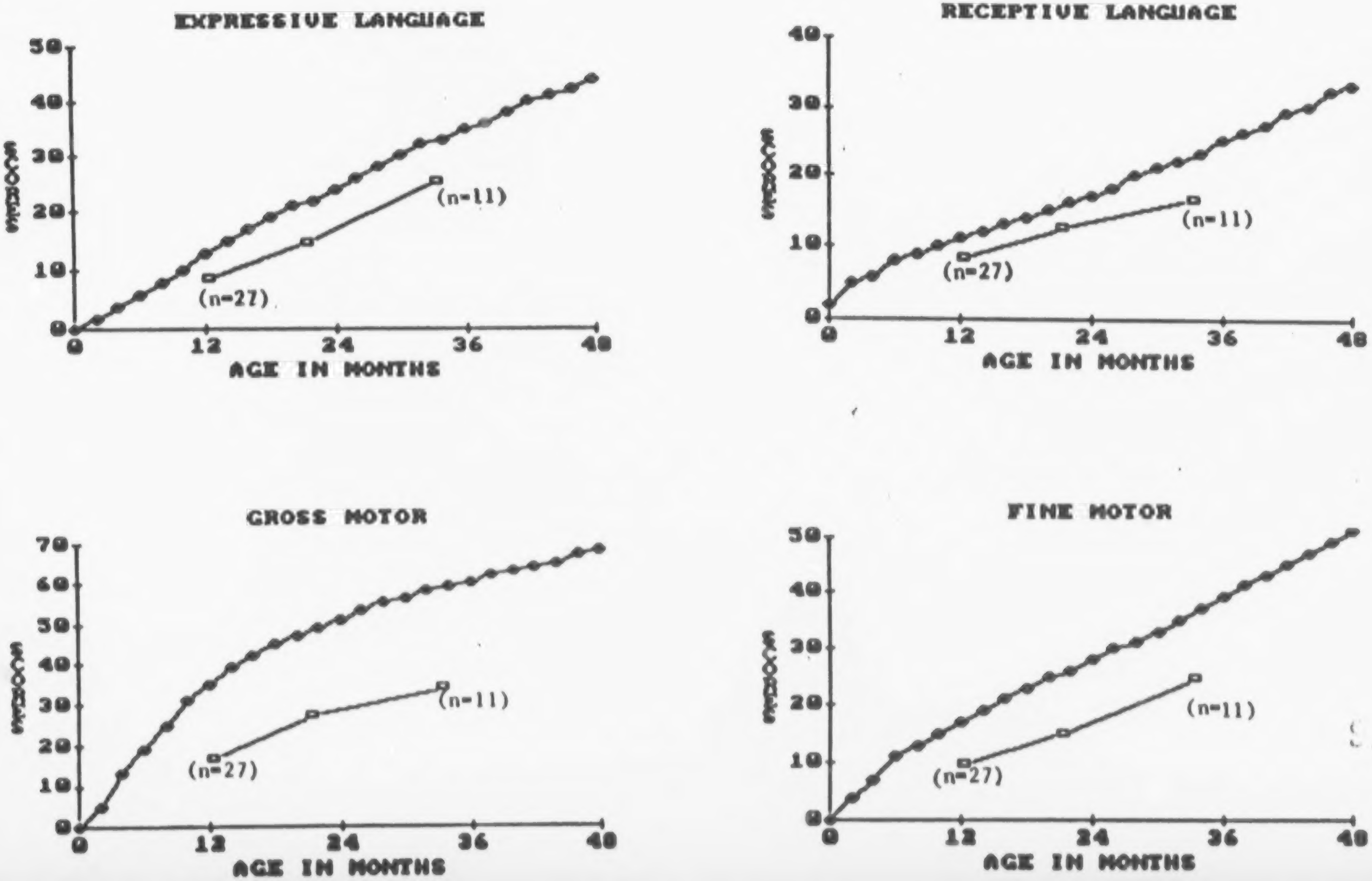


FIGURE 4.11B

Growth Rates on Developmental Scores for Norm Group (Heavy Line)
And Vision-Impaired Group (Light Line)
(Note: Since all cohorts are combined,
numbers of cases vary by time point.)



CHAPTER 5

Changes in the Family Following a Child's Placement in Special Education

In the past, most research on the efficacy of early intervention has focused on the developmental growth of the children. Although special educators, administrators, and policy makers alike would hope to see children make significant progress as a result of special education in the early years, important changes may be occurring in the family system as well. The Preschool Evaluation Project collected data from parents about family dynamics and interactions, including changes in employment status, family relationships, child-sibling play, family social behavior, and financial situation. This chapter is a discussion of these data which were collected using questionnaires. (See Appendix A for more information about the instrumentation and data collection procedures.) The last section of the chapter is a summary of comments parents made about the effects on family life of placing their child in special education.

Employment Status

In most families the employment status did not change for the male or female head of household following placement of the child in special education. At the time of pretest, most of the male heads of household were employed full time. About a quarter of the female heads of household were employed full time, and almost half were unemployed. As summarized in Table 5.1, male head-of-household employment status did not change in 95 percent of the families; and for females, no change was reported in 75 percent of the families following placement of the child in special education.

TABLE 5.1
Percentage of Parents by Employment Status

	Female Head of Household	Male Head of Household
At Pretest	(N=350)	(N=306)
Employed Full-time	27	93
Employed Part-time	24	3
Unemployed	49	4
Over Two or Three Year Period	(N=381)	(N=330)
No Change	75	95
Increase in Employment Level	12	3
Decrease in Employment Level	10	2
Fluctuations	3	--

Family Relationships

At the end of the first year of special education, close to half of the parents reported positive change in family relationships; however, more parents rated the relationships as unchanged and good. Two or three years after placement, fewer parents reported positive change in family relationships. Most of those who did not report positive change, indicated the relationships examined were already good. Very few parents reported negative change and some reported fluctuations. Overall, family relationships received somewhat more positive change ratings at the end of the first year of placement than they did after two or three years. Data on family relationships are summarized in Table 5.2.

Changes in family relationships were assessed by parents. Respondents were asked to indicate how relationships might have changed between the beginning and end of each school year, using the following response options: more positive, more negative, no change-good, and no change-could be better. Data were collected on the following relationships: father and child, mother and child, parents and siblings, child and siblings, and child and neighbor children. Changes reported in the specific relationships were as follows:

- There was slightly more positive change in the father/child relationship during the first year of placement than there was after two or three years. However, most respondents reported this relationship as unchanged and good at all time points.

- The data on the mother/child relationship was very similar to that on the father/child.

- More child/sibling relationships changed for the better after one year than after two or three. However, there were more fluctuations (e.g., positive-negative-positive) reported for this relationship than the others examined.

- Parent/sibling relationships changed the least over the three years of the relationships examined. Only about a quarter reported positive change after one year and two or three years.

- Relationships between program child and neighborhood children received more positive change ratings than other relationships after one year and after two or three years, suggesting parents perceived the program child's prior relationship with neighborhood children as the most lacking of all the relationships examined.

- Relationships which involved the program child directly (e.g., mother/child, father/child) were more likely to change than those that did not (e.g., parents/siblings).

TABLE 5.2
Percentage of Parents Reporting on Family Relationships

	Father/ Child	Mother/ Child	Child/ Siblings	Parents/ Siblings	Child/ Neighbors
End of one year	(N=353)	(N=383)	(N=302)	(N=302)	(N=331)
More positive	42	45	42	26	56
No change, good	51	53	50	69	37
Total Positive	93	98	92	95	93
After 2 or 3 years	(N=189)	(N=205)	(N=167)	(N=166)	(N=164)
More positive	31	33	32	23	44
No change, good	61	61	52	66	42
Total Positive	92	94	84	89	86

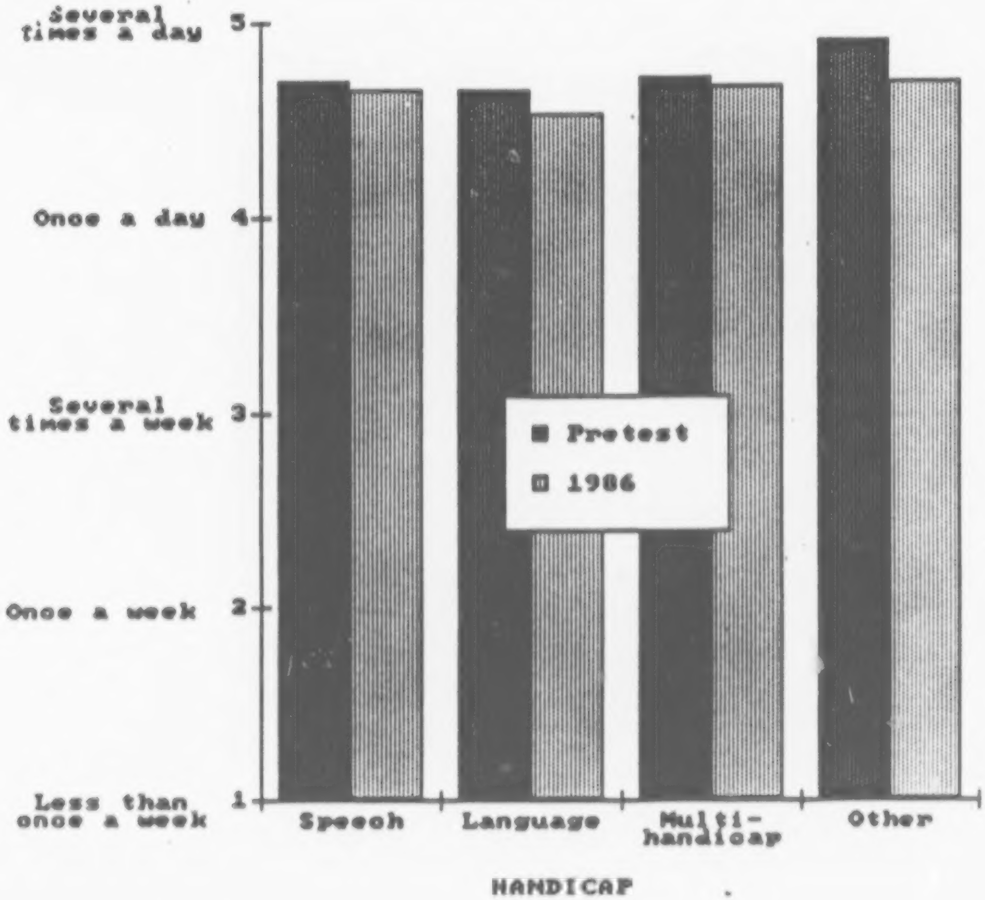
Child-Sibling Play

Seventy-seven percent of the children in the study had one or more siblings. Overall respondents reported that the frequency of play between the program child and his or her siblings was more than once a day at the time the child was pretested. Response choices ranged from less than once a week to several times a day. This did not change significantly over time (5 to 33 months), as far as could be measured by the instrument used in this study. Length of time the child was in special education did not appear to be a factor related to child-sibling play. Overall, older program children had less sibling play. Also, child-sibling play tended to decrease as the number of siblings increased, which could be explained by increased competition for interaction in the family.

The children classified as Speech Impaired, Language Impaired or Multihandicapped all had similar levels of sibling play. Children with other handicaps (e.g., Vision, Hearing) reportedly had slightly higher sibling play. However, the differences across handicap groups were quite small. Figure 5.1 illustrates the frequency of child-sibling play by handicap group.

FIGURE 5.1

Changes in Child-Sibling Play by Handicap Group

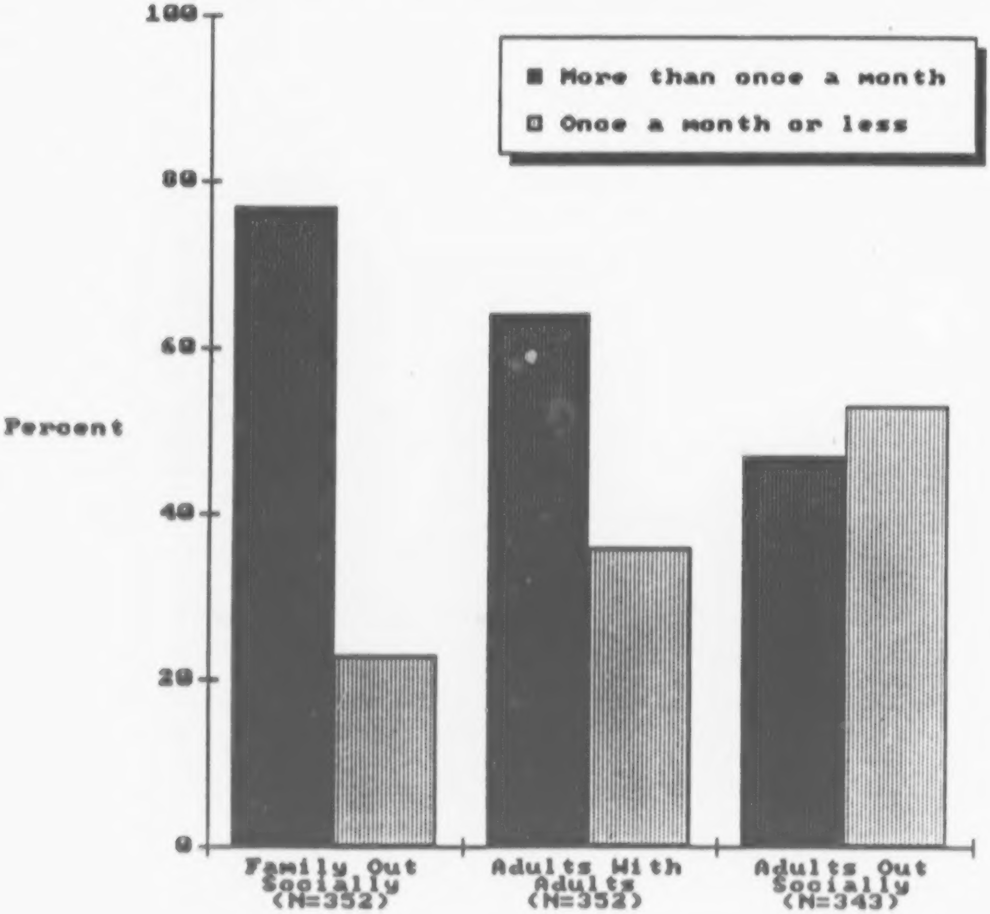


Family Social Behavior

Family Social Behavior at Time of Pretest. At the time of pretest, the most common social activity was family outings, whereas adults going out socially without the children was the least common. Frequency of family social behaviors is illustrated in Figure 5.2. Respondents rated the frequency of family social behavior by using a scale of 1 to 7 which ranged from "several times a week" to "never." Three quarters of the families were going out together socially (e.g., meal, movie, and friends) more than once a month at the time the child was placed in special education. Adults in the family reportedly spent time with other adults more than once a month in 64 percent of the families. And less than half of the respondents reported that adults in the family go out socially without the children more than once a month.

FIGURE 5.2

Family Social Behavior at Time of Pretest



Changes in Family Social Behavior. More than half the families reported changes in the three social behaviors examined two or three years after the child's placement in special education. However, the percentage of increases was similar to that of decreases. Changes in family social behavior two or three years after placement are summarized in Table 5.3. The data indicate that there was no change for many families in the frequency of family outings (34%), adults spending time with other adults (29%), and adults going out socially (39%).

Two or three years after the handicap child's placement in special education, there were changes in the family's social behavior as reported by parents. However, since the increases in social behavior were nearly the same as the decreases, it cannot be concluded that there is a relationship between program placement and family social behavior.

TABLE 5.3
Percentage of Families Reporting on Family Social Behavior
Two or Three Years After Placement

	Family Out Socially (N-376)	Adults w/Adults (N-373)	Adults Out Socially (N-350)
Increase	28	27	27
Decrease	27	30	26
No Change	34	29	39
Fluctuations	11	14	8

Financial Situation

Over the three-year period, 451 parents responded at least one time to a question about change in their financial situation as a direct or indirect result of the child's placement in special education. Most of the parents (87%) reported no change. Of the 206 parents from whom data are available from two or three time points, 12 percent reported fluctuations in their financial situation as a result of the child's placement.

If parents reported a change in their financial situation, they were asked to explain how. The nature of the explanations indicated that parents may have been describing how their situation changed as a result of their child being handicapped not as a result of the child's placement. In 1985 and 1986, of the 31 parents who gave explanations for positive change in their financial situation, three quarters gave one of the following responses: 1) more time to pursue career or increase work hours, 2) decreased cost for daycare or preschool, or 3) elimination of cost for therapy. Thirty-two respondents gave explanations for negative change, and the two most often given explanations were 1) needed to supplement with private therapy or pay for summer school and 2) placement interfered with or prevented work.

Effects on Family Life

Parents were asked to comment on how placement of their child in special education had affected family life. Overall, almost three quarters described the effects as being positive. The most common responses were 1) the child's placement resulted in better communication between family members and 2) the family knows the child's needs better. According to 20 percent of the respondents, placement of the child in special services did not have an effect on family life.

TABLE 5.4
Percentage of Parents Making Comments About the Effect of Child's Placement on Family Life in 1986
(N=272)

Comment	Percentage
Positive	
Better communication with child	25
General positive	23
Family knows child's needs better	12
Child improved	5
More family activities	4
Time for other things	3
Negative	
Schedule and transportation problems	3
Problems with label or reality of handicap	2
Other	2
Positive and negative	2
No effect on family	20

The following are examples of parents' comments:

> We can communicate with him. He enjoys life....He is a pleasure to be around, and we have a lot of good times watching him accomplish new things.
>
> I received help and support and was taught behavior management techniques.

Summary

The study examined changes in employment status, family relationships, child-sibling play, family social behavior, and financial situation, as well as effects of preschool special education placement on family life. The results are as follows:

- In most families, employment status, child-sibling play, and financial situation did not change following placement.
- Overall, a slight majority reported that family relationships examined were unchanged and good at the the end of the first year of placement. Less than half the respondents reported positive change in family relationships. Two or three years after placement, parents generally rated relationships as unchanged and good.
- More than half of the respondents reported changes in family social behavior two or three years after placement. However, increases and decreases were reported equally often.
- A large percentage of the respondents described the effects of placement on the family as positive. For example, better communication between family members and the child.

The fact that family relationships examined were rarely given negative ratings suggests that relating to the handicapped child was not seen as a significant problem. The positive changes in relationships that were reported cannot be attributed to the child's placement in special education because no comparison group data were available, either handicapped or non-handicapped.

The high percentage of positive descriptions of the effect of placement on the family indicates that program placement does benefit the family in a variety of ways. Further study is necessary to understand more fully the impact of special education placement on the family.

CHAPTER 6

Parent Satisfaction with Special Education Services

Parents reported a high level of satisfaction with the special education services provided to their children. This information was gathered via questionnaires which were mailed to parents in June of each project year. Parents were asked to rate the overall program and related therapy services (e.g., speech/language, occupational therapy, and physical therapy). Written responses were requested for the best and least liked aspect of services, as well as for recommendations for improvement. (See Appendix A for more information on data collection procedures and Appendix C for instrumentation.) Parent satisfaction data from June 1985 and 1986 are summarized in Table 6.1.[1]

Overall Program

Across both years and all handicap groups, parent satisfaction with the overall amount and quality of the program was high. The percentage of respondents who were satisfied or very satisfied was 90 percent or higher. Parents of children in the Multihandicap and Hearing-Impaired groups appeared to be slightly more satisfied with the overall program than parents of children in the other handicaps groups.

Related Services

Although parent satisfaction with the amount and quality of related therapy services was high both years, the satisfaction level was somewhat lower than for the overall program. The percentage of parents who were satisfied or very satisfied with the amount of related services ranged from 84 to 88 both years. As was the case with overall program ratings, the percentage of parents who were satisfied with the quality was slightly higher. Parents of children in the Multihandicap group were slightly less satisfied with the amount and quality of related services than parents of children in other handicap groups.

---

[1] Parent satisfaction data from June 1984 were presented in The Year-One Report.

TABLE 6.1
Percentage of Parents Very Satisfied or Satisfied with Services by Handicap Group[1] and Year

	OVERALL PROGRAM		RELATED SERVICES					
			Speech/Language		OT		PT	
Handicap Group	Overall Amount	Program Quality	Amount	Quality	Amount	Quality	Amount	Quality
1985 Total	93	94	88	91	88	91	86	91
Multihandicapped	96	96	78	84	86	93	82	90
Language Impaired	93	96	94	97	90	92	83	90
Speech Impaired	92	89	95	93	*	*	*	*
Hearing Impaired	*	*	*	*	*	*	*	*
Vision Impaired	*	*	*	*	*	*	*	*
1986 Total	90	93	87	92	84	89	85	90
Multihandicapped	94	97	79	86	80	83	82	90
Language Impaired	93	92	94	98	93	96	94	95
Speech Impaired	88	94	88	95	82	100	*	*
Hearing Impaired	100	100	100	100	*	*	*	*
Vision Impaired	*	*	*	*	*	*	*	*

1. Data are reported by Handicap Group for the year indicated, not by Initial Handicap Group. The assignment of a handicap group is changed if updated information on the child indicates that another label describes the child's handicap move accurately.

* Data not reported because N less than 10.

Length of Time Receiving Special Services

The percentage of parents who were satisfied or very satisfied with overall program and speech/language therapy did not change very much with length of time in services. However, the percentage of parents satisfied with occupational therapy and physical therapy increased with length of time since placement. As the analysis by handicap group showed, quality ratings were higher than ratings for amount of services.

TABLE 6.2
Percentage of Parents Satisfied or Very Satisfied with Services by Years Since Placement

Service	Years Since Placement <1 Year	 1 - 2 Years	 2 - 3 Years
Overall Program			
Amount	93	91	87
Quality	96	93	92
Speech/Language Therapy			
Amount	89	84	89
Quality	96	90	92
Occupational Therapy			
Amount	82	78	94
Quality	89	85	96
Physical Therapy			
Amount	84	82	91
Quality	90	86	96

Best Liked Aspect of Services

When parents were asked what aspect they liked best about their child's services, the most common response in 1985 and 1986 was about staff. Remarks included general compliments about the personnel or references to particular people. The second most common response in 1985 was a comment about their child's progress being the best aspect of services. The second most common response in 1986 was a general or specific comment about the quality or nature of services. Parents' comments are summarized in Table 6.3.

TABLE 6.3
Percentage of Parents Responding to Question About Best Liked Aspect of Services

Response	1985 (N=168)	1986 (N=284)
Staff	29	32
Child made progress	23	15
Quality or nature of services	12	23
Child received individual attention	12	13
Good communication between service providers and parents	7	*
Good location	6	*
Child was in small group or class	*	6

* Only responses given by 10 or more parents are included in the table.

The following are samples of the responses parents gave to the question about the best liked aspect of services:

> The individual attention given and knowledge of my child's abilities....
>
> Amy's teachers, (they) were wonderful this past year.
>
> I am pleased that our child's therapy takes place in a group setting....Possibly this experience has helped her to communicate.
>
> Diana has improved markedly in the last year. She is happier, more affectionate, and more communicative than before....
>
> (The program) seems to have well-trained and caring staff. They ...do their best to improve my child's skills.

Least Liked Aspect of Services

In response to the question about what was liked least about services, the most common answer both years was a comment about too little program time or not enough services. Other comments made by at least 10 percent of the respondents were poor communication between service providers and parents and bus problems. Parents' responses to this question are summarized in Table 6.4.

TABLE 6.4
Percentage of Parents Responding to Question About
Least Liked Aspect of Services

Response	1985 (N=100)	1986 (N=156)
Too little program time/services	29	24
Poor communication between service providers and parents	13	8
Bus problems	10	*
Erratic services	*	9
Too much distance between home and services	*	7

* Only responses given by 10 or more parents are included in the table.

The following are samples of the comments about the least liked aspect of services:

> Not enough time for PT, OT and speech. The staff was overworked. Our child had greater needs than they could meet in the time allotted....
>
> ...I and the other moms really didn't know what happened each day.
>
> I would prefer that she receive speech therapy at our own nearby elementary school. Instead, I take her to a further school....
>
> John was scheduled to receive speech therapy twice a week; frequently he received it only once a week, if at all....

Recommendations from Parents

Recommendations from parents for improvement of services were quite varied and often specific to an individual child. The most common recommendations were for more services and more communication between parents and service providers. Other comments made by at least 10 percent of the respondents were more individualized attention or smaller classes and more staff. Recommendations are summarized in Table 6.5.

TABLE 6.5
Percentage of Parents Making
Recommendations for Improvement of Services

Recommendation	1985 (N=94)	1986 (N=151)
More services	28	25
More communication between service providers and parents	20	21
More individualized attention/ smaller classes	14	*
More staff	*	11

* Only responses given by 10 or more parents are included in the table.

The following are some of the recommendations made by parents:

> My husband and I feel Katie probably needs more individual attention....
>
> ...the parent could be more closely advised as to what went on and what area was being worked on....
>
> More time for related services!!! We need more money and manpower to meet these children's needs....
>
> I think it would be better to have individual therapy, even if it meant a slightly shorter time.
>
> ...it would help more if parents with children in special programs could have more information on how to help their children at home....

Summary

Over the three years of data collection, parent satisfaction with the amount and quality of the overall program was consistently high. Ninety percent or more of parents gave ratings of satisfied or very satisfied. In response to questions about related therapy services, parents expressed slightly less satisfaction. In general, more parents were satisfied with the quality than the amount of services. Parents of children in the Multihandicap group were slightly more satisfied with the overall program and slightly less satisfied with related therapy services than parents of children in other handicap groups. Length of time in services did not appear to be related to parent satisfaction with overall program or speech/language therapy; however, parent satisfaction with occupational and physical therapy was somewhat greater the longer a child had received services.

Parents indicated that what they liked best about services was either the staff, the quality or nature of services, the fact that the child made progress, or the individualized attention given to their child. These comments accounted for more than three quarters of the responses in 1985 and 1986.

The most common response about the aspect of services least liked was too little program time or services. Other common responses were poor communication between service providers and parents and bus problems. Each year, more services was the recommendation given by the largest percentage of parents. Overall, parents clearly were satisfied with services and wanted more.

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CHAPTER 7

Conclusions and Implications for Policy and Research

Implications for Public Policy

With the passage of P.L. 99-457, the 1986 Amendments to P.L. 94-142 (the Education for the Handicapped Act), preschool special education gains a stronger foothold in the educational arena. This law extends the same rights and protections to handicapped children ages three to five as older handicapped children now enjoy, including a free appropriate public education. In addition, for 1987-88 all states have opted to receive funds to plan for the provision of services for handicapped children from birth to two years. In the coming years, an increasing amount of attention will be focused on establishing and expanding services for young handicapped children. Local decision makers are now examining the new law, surveying programs in other jurisdictions, and reviewing efficacy studies to interpret the law and meet the needs of the preschool handicapped children within the constraints of their local resources.

The data from this study highlight the importance of preschool special education and add to the growing body of literature on the efficacy of early intervention. Results such as this study's findings on short-term program benefits need to be replicated in other sites for communities to become committed to developing and expanding early childhood special education services. The data and experience with this evaluation study led the researchers to the following policy statement:

> Preschool special education enhances the development of children with a range of handicaps, mild to severe. Although, it might be tempting to serve primarily the mildly impaired youngsters on the assumption that they may benefit more, the data show that the severely handicapped also benefit from the services. The benefits of preschool special education may be greater for children who receive services earlier in life. A "wait and see" policy which postpones the provision of services to children who "may grow out of their delays," must be examined carefully.
>
> Dismissal from special education and/or reduction of service intensity are not, by themselves, appropriate measures of program success for many handicapped children. The use of such measures would produce a pessimistic picture of the benefits of early childhood special education. Rather, evaluators must seek out instruments which are sensitive to small and subtle increments of progress. With appropriate instruments, the efficacy of early education can be documented even though many handicapped preschoolers have severe educational handicaps which cannot be "cured."
>
> Satisfied parents are powerful advocates for early childhood special education. This study shows that parents are highly satisfied with the programs and their major complaint was that their children did not get enough This satisfaction is the precursor to advocacy. Although educational sentiment and federal

laws support early childhood special education, local voters play a crucial role in channeling resources to programs.

Local jurisdictions should collect data to show that their own preschool special education programs are successful. Such studies should include long-term data on handicapped persons' quality of life and their ultimate contribution to the community (e.g., employment or tax base). Research from other cities or universities is not so compelling as data which show local decision makers that their children are making substantial gains in their schools or programs. In addition, service providers need to know how their activities are helping the children they serve.

Implications for Research

This study provides valuable information about special education program effects, evaluation methods, and data collection measures. The researchers summarize here briefly what they have learned about research measures and methods, and what remains to be built upon this current knowledge base. Comments focus on child measures, family measures, program implementation measures, and analytic methods.

Child measures. Child measures have received the most attention in past research and represent the most well-developed area of this study. Study findings have established the following:

> The Battelle Development Inventory (BDI) provided a useful measure of a wide range of early childhood abilities compared to a single, global IQ score. Relative deficits in a child's profile of abilities corresponded to his/her type of handicaps.
>
> The BDI is valid for representative samples of handicapped children since the scores of our most "normal" group (speech impaired) tracked very close to the norm group scores across the age range, and the successively more handicapped showed successively lower scores.
>
> The skills and abilities measured by the BDI are susceptible to intervention. Short-term program benefits based on BDI assessments show the BDI scores are not a reflection of an unchangeable "genetic unfolding."

The research staff feels that the following issues regarding the BDI need attention in future studies:

> Despite the range of abilities assessed on the BDI, not all relevant skills were measured, such as articulation and fluency for the speech impaired. Other child measures may be necessary to supplement the BDI.
>
> The predictive utility of the BDI for later academic placement, academic performance, and school social adjustment should be examined.

Although the BDI claims to be for children from birth to eight years, it does not appear to be a useful measure beyond the fifth or sixth year of age for children with average or near average skills in some or all areas. A ceiling could not be established in some areas. Alternative measures must be found for follow-up evaluations of older children.

Family measures. In recent years, early childhood special educators have come to view the whole family as the recipient of services and the primary unit of support for the child. Data from families documented high levels of parent satisfaction with special services, but the study was not designed to examine the family in great detail. Future studies should include measures of marital satisfaction, family stress, and adaptation to the handicapped child, which are issues now receiving attention in research and evaluation studies.

Program measures. Data from this study show that early childhood special education enhances the development of handicapped preschool children who are served by a large school system. However, this study did not attempt to identify effective practices or answer specific questions about program implementation. For example, these data cannot address whether full-day or half-day services are equally beneficial for children. Future studies should consider examining which features of a program produce the most benefits for which types of children. The best program implementation measures are those which involve direct observation, but such procedures are usually prohibitively expensive. Therefore, program implementation studies could use surveys for the entire sample of children combined with more intensive observations of selected subsamples.

Analytic methods. Value-added analysis promises to be a useful tool for documenting short-term program effects. Future work with this technique should examine the effect of pretest measurement error on the "program effect" estimates and incorporate strategies to adjust for the effects of such error.

The problem of estimating long-term effects of special education programs remains unsolved. Several approaches to this problem could be explored through a properly coordinated set of similar research projects nationwide. For example, projects could pool their raw data (with the appropriate confidentiality safeguards) if they all used the same child measures. Given the large range of natural variation in such a pooled database, it is likely that a set of "untreated" children could be identified across a wide range of ages. These data could be used to estimate "expected maturation rates" for different handicapped groups at different age levels. Using a value-added strategy, observed growth rates across successive ages could be compared to those expectations and thus produce long-term program effects.

An alternative to the value-added strategy would be to develop more fully the analytic model presented in Chapter 1 by using a fuller set of measures as discussed above. With a better set of program implementation measures, the analysis would determine what types of program activities produce what types of developmental benefits for what types of children and families. Ultimately, such modeling studies will yield a fuller understanding of the linkages between programs, families, and children.

Evidence from the short-term program effects suggests that such modeling analyses are needed. For example, the Language-Impaired group showed short-term benefits in many developmental areas, yet educational programs may not have included activities in all improved areas. And, the Speech-Impaired group showed short-term benefits in the cognitive domain, although therapy focused on speech articulation and fluency problems. Also, for some children, age correlated positively with certain program effects; but age correlated negatively with program effects for other types of children. Such variegated findings demand replication in future analyses and more detailed examination with an analytic model based on a fuller set of measures.

APPENDIX A

Data Collection Procedures

Child Assessment Data

Instrument. The Battelle Developmental Inventory (BDI) was used as the assessment instrument for pre- and posttesting of all Project children. The BDI has several features which made it appropriate for this study:

- Standardized for use with children from birth to eight years;
- Separate scores in the following developmental areas:

  Personal/Social
  Adaptive
  Gross Motor
  Fine Motor
  Expressive Language
  Receptive Language
  Cognitive

- Normative data available, based on approximately 800 children from all sections of the United States;
- Adaptations for certain handicapping conditions built into the test administration;
- Three administration procedures available:

  Interview
  Structured one to one
  Observation

- Three-point scoring for most items:

  2 - demonstrates skill
  1 - emergence of skill
  0 - does not demonstrate skill

Since the BDI was not commercially available until 1984, the instrument was not familiar to practitioners and had not been "validated" by extensive use. For these reasons, the project asked service providers to rate the accuracy and usefulness of the test scores, using the BDI Questionnaire (an instrument developed by the project). Most service providers felt the BDI scores were generally within three months of their perceptions of the child's developmental level. However, these scores were not used often by the service providers. Appendix B contains a thorough description of the data collected with the BDI Questionnaire.

Procedure. During the first year of the project, pretesting was done in the first few months after a child enrolled in special services. This delay in pretesting was the result of difficulties obtaining the BDI, which had not yet been released for publication. Beginning July, 1984, almost all project children were tested prior to program entry. Posttesting was conducted between April and July of each project year.

The Personal-Social and Adaptive Domains, which focus on the child's interpersonal and self-help skills, were administered in an interview format, with the parent serving as informant. Interviews were conducted either over the phone or face to face, depending on the availability of the parent and placement of the child. The Motor, Communication, and Cognitive Domains contained mostly structured items, which were administered directly to the child in accordance with the directions specified in the BDI manual. The Motor Domain assesses the child's abilities in both gross and fine motor skills. The Communication Domain evaluates a child's understanding and use of language, (i.e., both receptive and expressive language skills). Finally, the Cognitive Domain assesses a child's memory, reasoning, conceptual, and preacademic skills. Although the BDI allows for the scoring of some items based on observation, this procedure was generally not used because of time constraints.

The total time for each assessment averaged two and one-half hours per child (30 minutes for the parent interview, two 40-minute testing sessions with the child, and 15 minutes for scoring). Pretesting was generally conducted in the child's home in the presence of the parent(s), unless parents requested otherwise. The exception to this was the Head Start students who were identified as needing speech and/or language therapy after they were enrolled in Head Start. These children were pretested at their school location. Posttesting was generally done at the child's program location unless services were provided in the home or on an itinerant basis only. In these cases, posttesting was conducted in the child's home. Each test was completed within a two-week period. Interpreters (e.g., sign, foreign language) were employed to assist the project testers when necessary.

Project staff checked each completed BDI for scoring accuracy when the tester turned in the test protocol. Errors found were corrected via consultation with project coordinators and testers. Test results were then sent to the parents and the child's service provider(s).

Personnel. The BDI was administered by trained persons with degrees in early childhood and/or special education and experience testing preschool handicapped children. Each trainee completed a 40-hour (approximately) training period conducted by the assistant project coordinator. The training involved a thorough classroom and individual review of the BDI manual, classroom demonstration, observation of experienced testers, practice testing, and observation of trainees by the assistant coordinator. Eighteen testers administered the BDI during the three years of the project.

Inter-rater Reliability. Scoring agreement percentages ranged from 78 (Gross Motor Domain) to 96 (Receptive Language Domain), as shown in Table A.1. To enhance the reliability of BDI administration, monthly tester meetings were held to discuss and resolve problems. A supervisor also periodically observed the testers. In the third year of the project, a formal procedure was established to monitor testing. Testers were paired, with one observing and scoring and the other administering the test. Any discrepancies were discussed by the pair at the monthly staff meetings. Discussion of these problems often led to more precise administering/scoring criteria. Simulated interviews were also conducted during monthly tester meetings to determine BDI scoring agreement in the Personal-Social and

Adaptive Domains. For these simulations, one tester interviewed a parent, and three to six testers observed and scored, with a discussion following.

TABLE A.1
BDI Scoring Agreement
Year 3

Domain/Subdomain	Type of Observation	Mean % Agreement	Number Observations
Gross Motor	One-on-one	78	10
Fine Motor	One-on-one	83	5
Cognitive	One-on-one	95	5
Receptive Language	One-on-one	96	2
Mixed (noninterview)	One-on-one	92	8
Personal/Social & Adaptive	One-on-one	90	2
Personal/Social & Adaptive	Group (N=3-6) Simulated interview	80	4

Application of Basal Rules. During the course of the project, the BDI was administered following the procedures outlined in the manual. However, application of the basal rules created some problems. A basal (and ceiling) must be established in each subdomain of the BDI. The basal is the point at which the tester can assume that the child could perform the previous items in the subdomain, and consequently those "easier" items are not administered. On the BDI, the basal is established when the child receives full credit for all items in an age category. Occasionally, a child will get two basals within one subdomain. The manual does not specify which basal to use. As a result of communication with the test developers, project staff used the highest basal.

In the final months of BDI testing, project staff received written information from one of the BDI developers which stated that the lower basal should be used if two are established within one subdomain. This new information caused concern to the project staff because the basal determines the scoring as well as item administration. To judge the impact of this contradictory information on the basal rule, a sample of the tests were reviewed. After the review, test data were not changed because of the relatively minimal change in scores and the large amount of clerical time that would have been necessary to rescore all tests.

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The review involved checking all tests of a random 10 percent of the children tested (N=75). The total number of tests checked was 185. The mean score difference between old and new scores and range of differences for usable scores are presented in Table A.2. Score differences were found in all but the Receptive Language Domain. The percentage of scores that were different were as follows: Personal/Social - 49; Adaptive - 11; Gross Motor - 8; Fine Motor - 9; Expressive Language - 1; and Cognitive - 21. In some cases, a score could not be computed once the new basal rule was applied because the section was incomplete. The percentages of tests that could not be rescored with the new basal rule were as follows: Personal/Social - 10; Adaptive - 4; Gross Motor - 3; Fine Motor - 3; Expressive Language - 0; and Cognitive - 11.

TABLE A.2
Discrepancies on the BDI Due to New Basal Rule

Domain/Subdomain	Raw Score Points Mean Difference	Range of Difference
Personal/Social	3.2	1-13
Adaptive	2.1	1-4
Gross Motor	2.3	1-5
Fine Motor	2.2	1-4
Receptive Language	0	-
Expressive Language	4	4
Cognitive	1.7	1-3

Accuracy of Data Entry. The sample of 185 BDI tests discussed above was also checked for data entry errors (i.e., entering test data into the data base system). Data on the original test booklets were checked against a computer printout of the data. The data entry error rate for the BDI scores was .4 percent. The error rate for the test date used in computation of age at time of test, was .5 percent.

Accuracy of Test Administration. As a result of the two checking procedures described above, it was discovered that one of the Project testers may have administered the BDI incorrectly to children between 35 and 63 months old. Consequently, 143 tests administered by this tester to children in the aforementioned age range were checked. Staff review determined erroneous administration on 65 of these tests (45%). A total of 1001 scores were checked and 108 (11%) errors found. All impacted domains were changed to "missing data" for those children. The percentage and number of scores changed in each domain to "missing" are presented in Table A.3.

TABLE A.3
BDI Test Data Changed to 'Missing'
(N = 143)

Domain/Subdomain	N	%
Personal/Social	14	10
Adaptive	39	27
Gross Motor	11	8
Fine Motor	11	8
Receptive Language	0	0
Expressive Language	0	0
Cognitive	33	23

Outliers. As a final check of BDI data, scatterplots were generated for the seven domains for each of the four rounds of testing. If a score appeared to be out of range for a particular age level, both age and score were verified. Of 272 ages and scores identified as possibly out of range, 32 (12%) errors were identified and corrected.

Attendance Data

Procedure. Attendance data from Years 1 (1983-84) and 2 (1984-85) were obtained from the cumulative attendance card in the child's school records. If the attendance cards were blank, attendance rosters maintained by the individual programs were consulted. Data were retrieved by project staff, school secretaries, or special education program personnel. Data from Year 3 (1985-86) for all public programs were collected from computerized attendance labels in the central office of MCPS before these were sent to the programs. Year 3 attendance data for private programs were obtained using the Year 1 and 2 procedures.

There was no reliable source of special education attendance on children who attended Head Start or were kindergarten age and above receiving Levels 1-3 services. Therefore, attendance data used for these children were the total number of days in attendance at school. These data were included in the analysis on the assumption that the percentage of special education attendance was proportionate to regular attendance.

Inaccurate Data. The children receiving itinerant speech and language services would sometimes appear as having zero absences for the entire school year. Attendance secretaries, when questioned about these attendance figures indicated that in many cases accurate attendance data were not kept on such children. In these cases, the data were not used. During Year 3 of the project, the attendance data for children receiving itinerant speech and language services with zero absences (N=33) were verified by looking at the attendance data from individual speech/language therapists. The following rules were used to decide if attendance data were valid:

- If all children served by an individual speech/language therapist had zero absences, then the data were not considered accurate and were not used for the analysis, (N=18, 55%).
- If some children served by an individual speech/language therapist had absences and others had perfect attendance, the zero absences were considered valid and used in the analysis (N=8, 24%).
- If an individual speech/language therapist served only one project child, with zero days reported absent, these data were given the "benefit of the doubt" and utilized in the analysis (N=7, 21%).

Verification of Special Services Received

Rationale. Specific program and related service (e.g., OT, PT, Speech/Language) information was maintained in the school system's special education database for each child receiving services through MCPS. This included amount and type of services the child was scheduled to receive. However, detailed information, in particular related service data, was not available for preschool children who received services from private programs funded by MCPS. In addition, even for those children who received services from MCPS programs, there was no procedure for determining what services a child actually received in comparison to what the child was scheduled to receive. Although attendance data were collected on all children, these data often were not accurate for preschool children, as described above, and did not reflect related service variations due to schedule changes or staff/student sickness.

Procedure. Project staff called the program and/or service provider of each child in the study to complete a Schedule Form. This form contained the name(s) of the service provider(s), location of services, type of services, and exact amount of services. These data were then entered in the project database and transferred to a Service Delivery Form (SDF). A SDF was sent to each child's program and/or service provider(s) for verification over a two-week period in November 1984. Verification involved indicating if the services were or were not received or if there had been changes in the schedule.

All returned SDF's were checked by Project staff for completeness and consistency. If problems were found, the service provider was contacted by telephone for clarification. When service providers did not return their SDF's at the conclusion of the two-week verification period, a phone call was made to remind them to do so. Sometimes the verification information was taken by phone. This service documentation procedure used in November 1984 was repeated for two-week periods in the following months: February 1985, April 1985, November 1985, February 1986, and April 1986. A new Schedule Form was completed at the point a child entered the Project and at the beginning of each school year. Changes in services during the course of the year were made as part of the verification process on the SDF's by service providers and copied to subsequent SDF's.

Demographic and Medical Data

Record reviews were conducted to obtain demographic and medical data on each Project child and his or her family. "Records" included the child's medical records, cumulative records, parent-completed forms, and placement information. With the exception of medical information, all information dated after the placement meeting was not included in the review. Thus, progress reports, later evaluations, teacher comments, etc., were not reviewed. Record reviews were completed for 604 children (93.5% of the database) between March and June of 1986.[1] Records could not be located for the other children and were not completed for children who had only one BDI test. The completeness of the children's records varied considerably, resulting in large amounts of missing data for some of the items.

Records were reviewed by four individuals. Reviewers participated in a one-day training session to learn coding procedures. The reviewers achieved 90 percent reliability on review of four records prior to data collection. Reliability was periodically reassessed and no reviewer ever fell below 85 percent reliability.

Family Change Data

To document changes in the family, the project collected data from parents about family dynamics and interactions using the Family Characteristics Questionnaire I and II (FCI & FCII). These questionnaires were developed and piloted between 1980 and 1983 by the Preschool Evaluation Project. Most of the parents were asked to complete the FCI when their children were pretested in the home. This procedure was followed with two exceptions. Head Start children receiving itinerant speech/language therapy were administered the pretest at their Head Start location; therefore, the parents of these children were sent the FCI with a stamped addressed envelope for return. A second FCI was mailed if the first one was not returned. The second exception was that families in Cohort 1 did not receive the FCI due to complications and delays in Project start-up. FCI's were obtained from 357 families, 55 percent of the sample.

The follow-up questionnaire, FCII, was mailed to parents in June 1984, 1985 and 1986. A stamped addressed envelope was included for returning the questionnaire. Parents whose children were enrolled in special services for three months or less at the time of each mailing were not sent a questionnaire. In addition, questionnaires were not sent if the family moved out of the county (unless the project had a forwarding address), the child died, or the child was dropped from the study prior to the mailing.

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[1] Record reviews were originally completed on 681 children. However, as a result of information collected through the record review, 77 of these children were later dropped from the project.

In June 1984, 123 FCII's were mailed and 45 percent (N=55) returned. The following June 328 FCII's were mailed to parents, and a second questionnaire was sent to those who did not respond to the first mailing. The final return rate for 1985 was 66 percent (N=215). The third year of the Project 545 questionnaires were sent. In an attempt to improve upon the response rate from 1985, two reminder letters were sent. The final return rate for 1986 was 70 percent (N=383).

Returned questionnaires were prepared for data entry by reviewing responses for inconsistencies, inappropriate ratings, and comments. Coding guidelines were developed after reviewing the open-ended comments.

Parent Satisfaction Data

In order to get feedback from parents about satisfaction with their children's special services, a mail questionnaire was used. The Parent Satisfaction Questionnaire was also developed by the Preschool Evaluation Project between 1980 and 1983. These questionnaires were mailed to parents of children in the Project with the FCII in June 1984, 1985, and 1986; therefore, information about return rates presented above is applicable to this instrument. Returned questionnaires were prepared for data entry by reviewing responses for inconsistencies, inappropriate ratings, and comments. However, no cross-checking was done to verify that the child actually received the service the parent rated. Coding guidelines were developed after reviewing the open-ended responses and all write-in comments.

APPENDIX B

BDI Questionnaire

Procedure

Since the Battelle Developmental Inventory (BDI) data were very important in this study and the instrument did not have a long history of use (published in 1984), feedback was solicited from service providers on a variety of issues related to the BDI, using a questionnaire. At the end of each year of the project, the BDI Questionnaire was sent to service providers of all children in the study.

In the spring of 1985[1], 216 questionnaires were sent with 65 percent being returned. However, only 25 percent (36) of the returnees indicated that they had enough exposure to the BDI to complete the questionnaire.[2] In 1986, 309 questionnaires were sent, and 77 percent returned, with only 21 percent (50) of those completed. Reminder letters and/or second questionnaires were not sent. Those who indicated they could complete the questionnaire are the "respondents" referred to below. It appears that service providers did not have or did not take the opportunity to review BDI test results. In some cases service providers did not want to answer questions about the BDI because they had only reviewed one or two tests.

Respondent Characteristics and Experience with BDI

Both years 80 percent of the respondents were either special education teachers or speech/language pathologists. Each year more than 50 percent of the respondents worked in one of two programs. The roles of the respondents are presented in Table B.1. Most of the respondents (68%) reported only a small number of their children (one to five) had been tested with the BDI. About 10 percent had more than 15 children who had been tested with the BDI. At least half of the BDI test results sent to them were reviewed by 40 to 60 percent of the respondents.

BDI Usefulness

Over the two-year period, up to one-third of the respondents reported having used the BDI test results for educational planning or talking with parents about the child's educational progress. Of those who used the test results, a high percentage (83-100%) reported that they were at least moderately useful. Use of the BDI for both purposes decreased from the second to third

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[1] Results from the BDI Questionnaire in 1984 are included in the Appendix D The Year-One Report.

[2] BDI age equivalent scores were sent to all service providers following administration of the test. Complete test booklets were available on request.

TABLE B.1
Percentage of Respondents by Role

Role	1985 (N - 36)	1986 (N - 50)
Director/coordinator	3	2
Physical therapist	6	4
Special educator/teacher	33	36
Speech-language pathologist	47	44
Occupational therapist	0	4
Head Start teacher	6	6
Not specified	6	4
	100%	100%

TABLE B.2
Use of BDI Test Results

Task	Percentage Who Used BDI 1985	Percentage Who Used BDI 1986	Of Users, Percentage Who Rated at Least Moderately Useful 1985	Of Users, Percentage Who Rated at Least Moderately Useful 1986
Educational planning	34	26	91	83
Talking with parents about educational progress	38	21	92	100

Accuracy of Test Scores

Service providers were asked to rate their impressions of the accuracy of the BDI scores in each of the five domains, using a nine-point scale. Table B.3 displays that a large percentage of respondents (71 - 92%) reported that scores were within three months of their estimates. In 1985, the domain considered most accurate was Personal/Social, and the least accurate ratings were given to Communication. Personal/Social also received the highest ratings in 1986, but Motor scores were considered least accurate in 1986.

The rating most commonly used by respondents both years for all domains was a "3," indicating that service providers believed BDI scores were similar to their estimates of the child's skills. Table B.4 presents all ratings for both years.

TABLE B.3
Percentage Rating BDI Scores Within
Three Months of Their Estimates

Domain	1985	1986
Personal/Social	92	88
Adaptive	84	81
Motor	85	77
Language	71	86
Cognitive	81	82

Note. Not all respondents responded to questions about each domain.

TABLE B.4
Percentage Rating[a] BDI Score Accuracy

Domain	n[b]	1	2	3	4	5	6	7
1985								
Personal/Social	24	0	8	54	13	4	4	17
Adaptive	19	0	11	58	5	5	11	11
Motor	20	0	5	70	0	0	15	10
Communication	24	8	13	38	13	13	8	8
Cognitive	21	5	5	52	10	5	9	14
1986								
Personal/Social	34	3	6	56	12	3	6	15
Adaptive	27	7	11	52	7	4	7	11
Motor	30	10	7	47	10	3	10	13
Communication	37	5	16	32	24	5	3	14
Cognitive	33	9	12	36	15	6	3	18

[a] Respondents were asked to rate their impressions of each of the BDI developmental domains, using the following scale:

1 - BDI scores are six or more months higher than I think they should be.
2 - BDI scores are about three months higher than I think they should be.
3 - BDI scores are about what I think they should be.
4 - BDI scores are about three months lower than I think they should be.
5 - BDI scores are six or more months lower than I think they should be.
6 - BDI scores are sometimes too high and sometimes too low, but generally about six months off.
7 - BDI scores are sometimes too high and sometimes too low, but generally about three months off.
9 - I cannot make a judgment.

[b] Includes only those who felt they could make a 1-7 judgment about that particular BDI domain. Not all respondents responded to questions about each domain.

Following the questions about accuracy of the BDI scores, service providers were asked on what they based their answers. Service providers ranked the following four answer options: 1) clinical impressions/classroom performance, 2) other test data, 3) feedback from other professionals, and 4) feedback from parents. These data are summarized in Table B.5. For both years, across all domains, most respondents ranked clinical impressions/classroom performance as having the most influence on their impressions of the BDI scores.

TABLE B.5
Percentage Ranking Clinical Impressions/Classroom Performance as Most Influential When Judging BDI Scoring Accuracy

Domain	1985	1986
Personal/Social	95	66
Adaptive	82	67
Motor	79	64
Communication	76	61
Cognitive	80	71

Results by Role

As noted previously, special educators and speech/language pathologists made up the largest portion of respondents. In 1985 and 1986, special educators reported less use of the BDI than speech/language pathologists for educational planning and talking with parents about educational progress, and less use than the total sample of respondents. In contrast, speech/language pathologists used the BDI results for these two purposes more than the total sample of respondents. Use of the BDI by both groups of professionals decreased from the second to third year of the project, as was the case for the total sample of respondents.

As shown in Table B.6, a clear majority of special educators and speech/language pathologists reported that the BDI scores were within three months of their estimates, which was the case with the total sample of respondents. Over all domains, for both years, speech/language pathologists' ratings of accuracy were somewhat higher than the total sample. Special educators' ratings were lower in 1985 and comparable in 1986 to the total sample.

The lowest accuracy ratings were given to the Communication Domain by both groups of professionals in 1985, which was the consensus of all the respondents. However, these groups differed on the most accurate domain. Speech/language pathologists reported the Motor Domain to be the most accurate, and special educators agreed with the respondents as a whole by choosing Personal/Social scores. In 1986, speech/language pathologists reported Personal/Social as most accurate and Motor as least data consistent with the total sample. The 1986 data from special educators was different, with Motor scores getting the highest ratings and Cognitive the lowest.

TABLE B.6
Percentage of Special Educators and
Speech/Language Pathologists Rating
BDI Scores Within Three Months of Their Estimates

Domain	Special Educators 1985	1986	Sp/Lang Pathologists 1985	1986
Personal/Social	89	85	92	93
Adaptive	78	83	89	89
Motor	76	92	100	76
Communication	64	86	71	84
Cognitive	67	72	90	86

Summary

The BDI was considered a fairly accurate assessment tool by the service providers in this sample. Data collected indicate that a high percentage of the respondents felt BDI test scores were within three months of their estimates. The Personal/Social scores were rated the most accurate. Rating judgments were primarily based on the service providers' clinical impressions and the child's classroom performance. Considering that the children tested were young and often difficult to test using standardized procedures, these ratings of BDI accuracy seem quite favorable.

Not many service providers used the BDI test scores, which may be due to the following reasons: 1) the tests were not given by them, 2) the tests were administered for research purposes, and 3) many service providers were not familiar with the BDI. However, most of those who used the scores found the information helpful. As a group, special educators were less likely, and speech/language pathologists more likely, to use the BDI than the total sample of service providers. Perhaps special educators had comprehensive developmental information on the children with whom they worked and pathologists did not.

APPENDIX C

Date Collection Instruments

STUDENT/FAMILY DESCRIPTIVE INFORMATION: RECORD REVIEW
PRESCHOOL EVALUATION PROJECT

Coder____ Date of Review: __ __ __ __ __ __
YR YR MO MO DA DA

Child and Family Demographics

Full Name ____________________ MCPS ID __ __ __ __ __ __

Birthdate __ __ __ __ __ __(YYMMDD)

Date of Initial CARD __ __ __ __ __ __(YYMMDD)

Date Entry FIRST MCPS program __ __ __ __ __ __(YYMMDD)

Home Language __

Living arrangement..______

Number of years of education: Female guardian...................______
Male guardian...................______

Occupational status: Female guardian..........................______
Male guardian..........................______

Siblings: Number older..______
" younger..______
" same..______

Medical Information

Hearing loss (history of or present)..........................______
Visual impairment..______
Cerebral palsy, hypertonicity, spasticity, athetosis, hypotonia.______
Spina Bifida/Meningomyelocele..........................______
Down's Syndrome..______
Otitis Media (recurrent ear infections; history of or present)..______
Other (specify)..______

Special Services prior to CARD (Only TWO most recent)

Most recent Program..______

From __ __ __ __ to __ __ __ __ Total months ______
YR YR MO MO YR YR MO MO

Types of service(s) received ____ ____ ____ ____ ____ ____

Next most recent Program..______

From __ __ __ __ to __ __ __ __ Total months ______
YR YR MO MO YR YR MO MO

Types of service(s) received ____ ____ ____ ____ ____

As of: 18 June, 1986

CODING GUIDELINES
RECORD REVIEW

Note: If you find conflicting information in the folder (e.g., "normal hearing" vs "mild hearing loss") write both pieces of information on form.

DO NOT LEAVE ANYTHING BLANK

Coder

1 = Cooper
2 = Karen Shadt
3 = Iris Goldfinger
4 = Lesley Crerkis
5 =
6 =
7 =
8 =

Date of Review Date review done by coder

Name Child's FULL name

MCPS ID 6-digit MCPS ID number

Date of birth Year, Month, Day

Date of CARD Date of first CARD. If child in Head Start, use date on IEP. Use CEDS date of "received services" if info not available elsewhere

Date of entry into first MCPS program Year, Month, Day. Obtained from CRT

Home Language

1 = Assumed English ONLY
2 = English and other language (including sign language) OR only other language

Living Arrangement at the Time of First CARD

The following codes only apply to adults in the home. Do not consider children in assigning a code. Always check first on the Early Childhood Placement Request Form - item 1 under General Information.

1 = with both parents (use this code if a mother and father listed, unless other relationship specified)
2 = with one natural parent
3 = with one natural parent and one step-parent
4 = with one natural parent and other adult(s)
5 = with relative(s) other than parent
6 = with foster parent(s)
7 = with adoptive parent(s)
8 = other (specify on form)
9 = unknown

Number of years of parents' education

Record as is stated in the records, and NOT your calculated total. For example, "high school graduate", "three years of college", "Master's degree".

Refer to the green MCPS school card and the DESC Medical Report - Family History

99 = information not available

1/2 year = round up to next year

Project staff will convert this information into years of education.

"Grade School" = 6
Junior High = 9
High school dropout = 11 years
High school education/Diploma/High school (graduate) = 12 years
High school plus any type of special "school" = 13
Technical school/Junior College/Community college graduate/AA degree = 14 yea
"Some college"/"college" = 14
RN = 15
"College plus" = 16 (No credit for "plus")
College graduate/BS/BA/BBE/EE = 16 years
Post-College graduate = 17
"Graduate degree"/MBA/MEE/EdM/MS/MA/Masters degree = 18 years
Ph.C. = 19 years
Ph.D./Ed.D. = 20 years
LLD/JD/Law/Medical/Vet/Dental school = 20 years
"General Business" = 99

Occupational status

Write occupation (and provide description) and place of employment on dots (for example, "AT & T, telephone operator"). Try to avoid confusing comments like "US Navy" or "MCPS", which are not specific.

To get this information, refer to DESC report or intake form.

If not employed, indicate this on form. Must say "unemployed." Do not infer.

99 = Information not available

Project staff will assign a code to the occupation written on the form. The codes, which you do not use, are as follows:

1 = higher executives, proprietors of large concerns, and major professionals
2 = business managers, proprietors of medium sized businesses, and lesser professionals
3 = administrative personnel, small independent businesses, and

minor professionals
4 = clerical and sales workers, technicians, and owners of little businesses
5 = skilled manual employees
6 = machine operators and semi-skilled employees
7 = unskilled employees
9 = unemployed/housewife/student
10 = employed, but status unclear. Work phone number provided

Siblings

Refers to children in the home who are related by blood or marriage or legally adopted. Write in number of siblings in each age category (older, younger and same) at the time of CARD.

If the child has no siblings or mother is pregnant, code "0".

If there are step-sibs but they do not live in home, do not code.

Code "99" if no information.

Medical Information

Check DESC Pediatric Exam report and any other available medical records. You may use information in medical reports written after the CARD meeting.

Problems which occurred during the first few days of life (apnea, jaundice, or respiratory problems) and beyond, code under "Other".

1 = NO, assumed no, suspected, questionable or, test results are conflicting or not considered reliable

2 = yes (specify reason on dots)
Use this code only if condition confirmed. For example, "The child has a severe meningomyelocele," "The child has a moderate hearing loss," "The child has notable hypotonia".

For "Other", record ANY other medical condition or unusual description of the child mentioned in the records. The condition may be currently "active" or it may be only in the child's history.

Examples: hand tremor
allergies
small for age
stereotypic behaviors
dysmorphic features
ptosis
eating problems
pneumonia
premature

Do not code "developmental delay" under "Other." Do not code "speech/language impaired" or other indications of the disorder (e.g., poor attention span). Code "otitis media" as "2" if 2 or more episodes reported.

Special Services Prior to CARD (only TWO most recent)

**Watch for children in the Auditory and Vision Programs who are "diagnostically placed" and receive services prior to the first CARD. These services should be coded here. (See #5 on Early Childhood Placement Request Form).

Program/Service

Write name of program on dots
1 = special services provided by MCPS (e.g., auditory, DESC)
2 = other special services
0 = no prior special services

From/to

Year, Month (two digits each)
If stated "academic year", code September-June.
If stated "summer", code July-August, unless stated otherwise.
If currently in service, record the current month. For example, the Auditory children who are in services at the time of CARD.
9999 = information not available
1/2 month = round up

Total months

Total months in service. If have information regarding number of days: for 15 or more days, round up to the next highest month.
99 = information not available

Types of service(s) received

1 = classroom
2 = speech therapy
3 = OT
4 = PT
5 = vision services
6 = auditory services
7 = social services
8 = other (specify on form)
9 = not specified

Code neurodevelopmental therapy (NDT) as "Other" (8).

Preschool Evaluation Project
Montgomery County Public Schools
Rockville, Maryland

FAMILY CHARACTERISTICS
Parent Questionnaire—Form I

Name of Parent Completing Form: ____________________

Program Name: ____________________

Sometimes placing a child with special needs in a program to receive educational services not only has an effect on the child, but it may also have an effect on the child's family. This effect may be seen in many different ways: for example, the type of activities in which family members engage may change, or the child's mother may take a job outside of the home. This questionnaire will ask about different family activities to try to determine if and how your family may have been affected by enrolling your child with special needs into an education program.

Directions: To answer most of the questions you will be asked to write a number in a space next to each question. In this questionnaire, your child, ____________________, will be referred to as the "program child" in order to distinguish him or her from other children you may have.

Example:

THE FOLLOWING QUESTIONS REFER TO YOUR PRESENT FAMILY SITUATION.

1. a. Is the female head-of-household (HOH) currently ___2___

Answer Choices:

1=Not employed?
2=Employed part-time?
3=Employed full-time?
4=There is no female HOH.

b. If working, what is her occupation? ___NURSE___

An answer choice of "2" to question 1.a. means that at the present time the female head-of-household is working part-time and the response to question 1.b. means that she is working as a nurse.

Your answers will be coded to an identification number (ID). All answers will be kept strictly confidential.

Thank you very much for your help. At the end of the school year we will be sending you another questionnaire like this to answer.

MCPS 078-9933C, revised 4/83

FAMILY CHARACTERISTICS
Parent Questionnaire—Form I

Office Use

Form Code: 605 1-3
Program ID: ______ 4-5
Parent ID: ______ 6-8
9 blank

THE FOLLOWING QUESTIONS REFER TO YOUR PRESENT FAMILY SITUATION.
Write the number of your answer choices in the space to the right.

1. a. Is the female head-of-household (HOH) currently . . . . ______ 10

Answer Choices:

1=Not employed?
2=Employed part-time?
3=Employed full-time?
4=There is no female HOH.

b. If working, what is her occupation? ______________________________

2. a. Is the male head-of-household (HOH) currently . . . . ______ 12

Answer Choices:

1=Not employed?
2=Employed part-time?
3=Employed full-time?
4=There is no male HOH.

b. If working, what is his occupation? ______________________________

3. Use the answer choices below to answer the following questions.

Answer Choices:

1=Several times a week
2=Once a week
3=Once every two weeks
4=Once a month
5=Less than once a month
6=Never
7=Not applicable

About how frequently:

do adults in your household go out together socially? . . . . ______ 14
do adults in your household spend time together with other adult friends? . . . . . . ______ 15
does your family go out together socially (for lunch, dinner, movie, visit friends, etc.)? ______ 16

4. What are the birthdate and sex of your other children? Do not include information on the "program child?" If you have no other children write 9's in the spaces in the chart. Also, if you do not have as many children as there are spaces provided, write 9's in the blank spaces. If you have more than 5 other children, please write the information for these additional children on the back of the questionnaire's cover sheet.

Other Children	Birthdate	Sex [1=Male; 2=Female]	
Child 1	______	______	17-20
Child 2	______	______	21-24
Child 3	______	______	25-28
Child 4	______	______	29-32
Child 5	______	______	33-36

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5. Use the answer choices below to answer the following questions for each of your other children. If you have more than 5 children, please write the information for these additional children below the chart or on the back of the questionnaire's cover sheet.

Answer Choices:

1=Several times a day
2=Once a day
3=Several times a week
4=Once a week
5=Less than once a week
8=Not applicable
9=No other children in family

About how frequently:

	Child 1	Child 2	Child 3	Child 4	Child 5	
does this child bring his/her friends home?	________	________	________	________	________	37-41
does this child play with the program child?	________	________	________	________	________	42-46
does this child take care of the program child?	________	________	________	________	________	47-51

Preschool Evaluation Project
Montgomery County Public Schools
Rockville, Maryland

FAMILY CHARACTERISTICS
Parent Questionnaire—Form II

Name of Parent Completing Form: ____________________

Program Name: ____________________

Sometimes placing a child with special needs in a program to receive educational services not only has an effect on the child, but it may also have an effect on the child's family. This effect may be seen in many different ways; for example, the type of activities in which family members engage may change, or the child's mother may take a job outside of the home. This questionnaire will ask about different family activities to try to determine if and how your family may have been affected by enrolling your child with special needs into an education program.

Directions: To answer most of the questions you will be asked to write a number in a space next to each question. In this questionnaire, your child, ____________________, will be referred to as the "program child" in order to distinguish him or her from other children you may have.

Example:

THE FOLLOWING QUESTIONS REFER TO YOUR PRESENT FAMILY SITUATION.

1. a. Is the female head-of-household (HOH) currently 2

Answer Choices:

1=Not employed?
2=Employed part-time?
3=Employed full-time?
4=There is no female HOH.

b. If working, what is her occupation? NURSE

An answer choice of "2" to question 1.a. means that at the present time the female head-of-household is working part-time and the response to question 1.b. means that she is working as a nurse.

Your answers will be coded to an identification number (ID). All answers will be kept strictly confidential.

Thank you very much for your help.

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MCPS 078-9933C, revised 4/83

FAMILY CHARACTERISTICS
Parent Questionnaire—Form II

Office Use

Form Code:	606	1-3
Program ID:	______	4-5
Parent ID:	______	6-8
		9 blank

THE FOLLOWING QUESTIONS REFER TO YOUR PRESENT FAMILY SITUATION.
Write the number of your answer choices in the space to the right.

1. a. Is the female head-of-household (HOH) currently .... ______ 10

Answer Choices:

1=Not employed?
2=Employed part-time?
3=Employed full-time?
4=There is no female HOH.

b. If working, what is her occupation? ____________________

2. a. Is the male head-of-household (HOH) currently .... ______ 12

Answer Choices:

1=Not employed?
2=Employed part-time?
3=Employed full-time?
4=There is no male HOH.

b. If working, what is his occupation? ____________________

3. Use the answer choices below to answer the following questions.

Answer Choices:

1=Several times a week
2=Once a week
3=Once every two weeks
4=Once a month
5=Less than once a month
6=Never
7=Not applicable

About how frequently:

Do adults in your household go out together socially? .... ______ 14

Do adults in your household spend time together with other adult friends? .... ______ 15

Does your family go out together socially (for lunch, or dinner, movie, visit friends, etc.)? .... ______ 16

4. The chart below has been completed using information on your other children that you provided at an earlier time. Please check the information and change any incorrect information or add new information.

Other Children	Birthdate	Sex [1=Male; 2=Female]	
Child 1	______	______	17-20
Child 2	______	______	21-24
Child 3	______	______	25-28
Child 4	______	______	29-32
Child 5	______	______	33-36

5. Please use the answer choices below to answer the following questions for each of your other children in the order they are listed in Question 4.

Answer Choices:

1=Several times a day
2=Once a day
3=Several times a week
4=Once a week
5=Less than once a week
8=Not applicable
9=No other children in family

About how frequently:

	Child 1	Child 2	Child 3	Child 4	Child 5	
Does this child bring his/her friends home?	______	______	______	______	______	37-41
Does this child play with the program child?	______	______	______	______	______	42-46
Does this child take care of the program child?	______	______	______	______	______	47-51

6. Use the answer choices below to indicate how the relationships among your family members might have changed between 1) the beginning of this school year and 2) the present time.

Answer Choices:

1=Much more positive
2=Slightly more positive
3=No change; relationship continues to be good
4=No changes; relationship could be better
5=Slightly more negative
6=Much more negative
7=Not applicable

How would you describe any changes that may have occurred in the relationships between:

mother and program child? . . . . ______ 52

father and program child? . . . . ______ 53

parents and other children in the family? . . . . ______ 54

program child and other children in the family? . . . . ______ 55

program child and neighborhood children? . . . . ______ 56

7. a. Has your financial situation changed either positively or negatively as a direct or indirect result of placing your child in a special education program? . . . . ______ 57

Answer Choices:

1=Yes, in a positive way.
2=Yes, in a negative way.
3=No change as a result of placing child.

b. If your answer was 1 or 2, please explain how your family's financial situation has changed.

____

____

____

____

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8. Please comment on if and in what way(s) placing your child in a special education program has had an affect on your family life (e.g., how family members get along, how often family members do things together, how family members feel about the "program child," etc.)

____

____

____

____

9. When did your child first begin to receive services from a special education program? In the space below, please record the month and year when your child was enrolled in his or her first special educational program. (Record your answers as follows: for January write "01" in the space labeled "Month," write "02" for February, "03" for March, etc. If your child began in a program in 1980, write "80" in the space labeled "Year.")

Month ______ 59-60

Year ______ 61-62

Preschool Evaluation Project
Montgomery County Public Schools
Rockville, Maryland

SERVICE DELIVERY
Parent Questionnaire

Parent's Name: ______________________________

Often the educational services given to a child are seen differently by the many adults who work with that child. For example, the child's teacher may have a very different view of the speech therapy given to a child than the child's parents may have. The purpose of this questionnaire is to better understand parents' feelings and attitudes toward the service their child is receiving.

Directions: To answer most questions, you will be asked to select an answer from a list of choices. Some questions will ask you to write out your answer.

Example:

How satisfied are you with the amount of the services your child receives? Indicate how satisfied you are with the amount of each service given to your child by writing the number of one of the answer choices in the space next to each service.

Answer Choices:

1=My child does not receive this service.
2=Very satisfied.
3=Satisfied.
4=Neither satisfied nor dissatisfied.
5=Dissatisfied.
6=Very dissatisfied.

Overall Program 3
Physical Therapy (help in use of gross motor, sit, crawl, walk .. 1

An answer of "3" next to "Overall Program" means that you are satisfied with all parts of your child's program. An answer of "1" next to "Physical Therapy" means that you cannot rate physical therapy services because your child does not receive them.

Your answers will be coded to an identification number (ID). All answers will be kept strictly confidential.

Please use the reverse side of this page to clarify any of your answers.

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MCPS 077-9933B, revised 3/83

SERVICES DELIVERY
Parent Questionnaire

Office Use

Form Code: 610 1-3
Program ID: ______ 4-5
Parent ID: ______ 6-8

Program Name: ____

1. How satisfied are you with the amount of services your child receives? Indicate how satisfied you are with the amount of each service given to your child by writing the number of one of the answer choices in the space next to each service.

Answer Choices:

1=My child does not receive this service.
2=Very satisfied.
3=Satisfied.
4=Neither satisfied, nor dissatisfied.
5=Dissatisfied.
6=Very dissatisfied.

Overall Program .... ______ 9
Speech Therapy (help in speech, saying sounds and words, eating without choking) ... ______ 10
Occupational Therapy (help in use of fine motor, fingers, hands) .... ______ 11
Physical Therapy (help in use of gross motor, sit, crawl, walk) .... ______ 12
Behavior Management/Counseling (help with behavioral or emotional problems) ...... ______ 13
Home Visits .... ______ 14

2. a. Approximately how many times during this school year has someone from your child's program visited and/or is scheduled to visit your home? Write your answer on the line to the right. If your answer is 2, write 02 on the line .... ______ 15-16

   b. On the average when staff have visited your home, how long did they stay? Write your answer in hours and minutes in the space to the right. If your answer is 1 hour, write 1 on the line labeled "Hours" and 00 on the line labeled "Minutes."

Minutes ______ 17-18

Hours ______ 19-20

3. How satisfied are you with the quality of the services your child receives? Indicate how satisfied you are with the quality of each service given to your child by writing the number of one of the answer choices in the space next to each service.

Answer Choices:

1=My child does not receive this service.
2=Very satisfied.
3=Satisfied.
4=Neither satisfied, nor dissatisfied.
5=Dissatisfied.
6=Very dissatisfied.

Overall program .... ______ 22
Speech Therapy (help in speech, saying sounds and words, eating without choking) ... ______ 23
Occupational Therapy (help in use of fine motor, fingers, hands) .... ______ 24
Physical Therapy (help in use of gross motor, sit, crawl, walk) .... ______ 25
Behavior Management/Counseling (help with behavioral or emotional problems) ...... ______ 26
Home Visits .... ______ 27

4. What do you like best about the services your child receives and why?

5. What do you like least about the services your child receives and why?

6. What recommendations do you have that you believe would improve the services your child receives?

This concludes this questionnaire. Thank you.

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SERVICE DELIVERY FORM

PROGRAM: ______________ WEEK OF: ____________ PERSON COMPLETING FORM: ____________________ DATE: __________

CHILD'S NAME	DAY	PROGRAM TIME		SPEECH/LANGUAGE THERAPY		OCCUPATIONAL THERAPY		PHYSICAL THERAPY		PARENT SERVICES		OTHER
		Home	Center	Home	Center	Home	Center	Home	Center	Home	Center	
1.	M											
	T											
	W											
	TH											
	F											
2.	M											
	T											
	W											
	TH											
	F											
3.	M											
	T											
	W											
	TH											
	F											

✓ = Service received (at least ½ scheduled time)
○ = Service NOT received
/ = Child or service dropped (specify reason) or service permanently changed

Person accompanying child:

P = Parent
C = Other caregiver (grandparent, sitter, etc.)

****TIME RECORDED IN MINUTES****

MCPS# 128-0623, 6/8

PRESCHOOL EVALUATION PROJECT
Montgomery County Public Schools
Room 11
850 Hungerford Drive
Rockville, Maryland 20850

SERVICE DELIVERY FORM - DIRECTIONS

Directions: The Service Delivery Form has been designed to collect information on the special educational services, both diagnostic and treatment, which children receive in Montgomery County. On the basis of our records, the forms have been completed. However, we would like you to verify the services actually received during the two weeks specified on the form.

To help us collect accurate information, please:

- Include information for the specified week only.
- Do not use black ink.
- Check the form prior to returning it, to make certain all entries have been verified.
- Contact the appropriate service provider if you are unclear about how much time a child received a particularr service.
- Contact Judith Cooper or Joy Markowitz at 279-3767 if you have any questions.

This project is jointly administered by the Office for Special and Alternative Education and the Department of Educational Accountability.

For the purposes of this form, please use the following guidelines:

SERVICES RECEIVED

If the child received the amount of service recorded on the schedule, place a check (✓) next to that entry. (See Child 1)

If the child received at least half the time noted, place a check (✓).

If the child received services different than or in addition to those noted, write the time on the form, in the correct column. Cross out the incorrect information. (See Child 3) Please make sure it is clear how much service thechild is scheduled to receive.

SERVICES NOT RECEIVED

If the child was absent, circle the time. (See Child 2)

If the child happened to receive less than half the service scheduled, circle that time, write in how much was received, and check (✓). (See Child 2)

If a child is no longer receiving a service or is no longer in the program, cross out the appropriate service or name, and indicate reason. (See Child 1)

PERSON ACCOMPANYING CHILD

If a parent or caregiver was present when the child received a service, please indicate by writing "P" for parent or "C" for caregiver (sitter, grandparent, etc.) next to the time. (See Child 1 and 3)

HOME VISITS

If two people provide services during a single home visit, split the time. For example, if a speech/language pathologist and occupational therapist provide services during a 30 minute home visit, record 15 minutes under "Speech/Language Therapy" in the "Home column, and 15 minutes under "Occupational Therapy" in the "Home" column.

PARENT SERVICES

This column includes the time parents spend in group educational or counseling services, that is, parent-oriented services.

Individual counseling services to the parent are included in the "Other" category.

"OTHER" COLUMN

Diagnostic or treatment services which do not fit into the available categories. Include minutes of service, day (e.g.,Monday, December 1), place (e.g. home, center), and type of service (e.g. psychological evaluation).

Individual parent counseling

Parent consulation and phone calls

Expiration date: 5/87

Preschool Evaluation Project
Montgomery County Public Schools
Rockville, Maryland

BATTELLE DEVELOPMENTAL INVENTORY (BDI) QUESTIONNAIRE

If you have not had sufficient contact with the BDI to answer the following questions, please check here and return the blank questionnaire. __________

1) Approximately how many children that you serve have been tested with the BDI? (Please check one answer.)

1-5 _____ 6-10 ______ 11-15_____ 16-20 ______ More than 20 ______

2) What percentage of the test booklets and results have you had an opportunity to review? (Please check one answer.)

0-25% _______ 26-50% _______ 51-75% _______ 76-100% _______

For part A of the next five (5) questions, please use following scale:

1 = BDI scores are 6 or more months higher than I think they should be
2 = BDI scores are about 3 months higher than I think they should be
3 = BDI scores are about what I think they should be
4 = BDI scores are about 3 months lower than I think they should be
5 = BDI scores are 6 or more months lower than I think they should be
6 = BDI scores are sometimes too high and sometimes too low, but generally about 6 months off
7 = BDI scores are sometimes too high and sometimes too low, but generally about 3 months off
9 = I cannot make a judgment

3) A. In general, what are your impressions of the BDI test results in the Personal/Social Domain? (Please enter number from scale above.)

_____

B. On what do you base your answer? (Rank order from 1 to 4, with 1 being the source which most influenced your answer.)

Clinical impressions/Classroom performance..... _____
Other test data................................ _____
Feedback from other professionals .... _____
Feedback from parents .... _____

4) A. In general, what are your impressions of the BDI test results in the Adaptive Domain? (Please enter number from scale above.) _____

B. On what do you base your answer? (Rank order from 1 to 4.)

Clinical impressions/Classroom performance..... _____
Other test data................................ _____
Feedback from other professionals.............. _____
Feedback from parents.......................... _____

5) A. In general, what are your impressions of the BDI test results in the Motor Domain? (Please enter number from scale above.) _____

B. On what do you base your answer? (Rank order from 1 to 4.)

Clinical impressions/Classroom performance..... _____
Other test data................................ _____
Feedback from other professionals.............. _____
Feedback from parents.......................... _____

6) A. In general, what are your impressions of the BDI test results in the Communication Domain? (Please enter number from scale above.) _____

B. On what do you base your answer? (Rank order from 1 to 4.)

Clinical impressions/Classroom performance..... _____
Other test data................................ _____
Feedback from other professionals.............. _____
Feedback from parents.......................... _____

7) A. In general, what are your impressions of the BDI test results in the Cognitive Domain? (Please enter number from scale above.) _____

B. On what do you base your answer? (Rank order from 1 to 4.)

Clinical impressions/Classroom performance..... _____
Other test data................................ _____
Feedback from other professionals.............. _____
Feedback from parents.......................... _____

8) Did you attempt to use the BDI test results for educational planning?

Yes _____ No _____

If yes, how useful were the BDI test results for this purpose? (Please circle the number which best describes your answer.)

Very useful		Moderately useful		Not useful
1	2	3	4	5

9) Did you attempt to use the BDI test results to talk with parents about their child's educational progress?

Yes _____ No _____

If yes, how useful were the BDI test results for this purpose? (Please circle the number which best describes your answer.)

Very useful		Moderately useful		Not useful
1	2	3	4	5

10) Please check one category which best describes your present role.

____ Director/Coordinator
____ Physical Therapist
____ Special Educator/Teacher
____ Speech/Language Pathologist
____ Occupational Therapist
____ Head Start Teacher
____ Other (please specify)____________________________

Additional Comments____

Thank you very much for your time.

APPENDIX D

VALUE-ADDED ANALYSIS

Children in special education programs will very likely show some growth in developmental scores from one testing time to the another time 10 or 12 months later. To determine just how much the special education programs helped growth, some way is needed to sort out the potential program effects from the amount of growth due simply to maturation over the 10- or 12-month period. The value-added[1] analysis technique provides such a method where more traditional techniques will not work.

In a more traditional approach, the growth of children in the educational program is compared to that of similar children who received no such program. The difference in growth between the two groups is then attributed to the educational program. Unfortunately for the researcher, but fortunately for the children in preschool special education, such an approach is not feasible for this study since Maryland law specifies that all preschool children identified with handicaps are to receive preschool services. Thus, there is no available comparison group of similar but untreated children against which to compare the growth of the children in the special education programs.

The value-added technique overcomes this problem by providing an estimate of how much the children could be expected to grow in the absence of the preschool special education services. Scores on developmental measures for young children are typically correlated very highly with age. The higher the child's age, the higher the score. A regression equation calibrates the score change to the age change so that one can say, for any given sample of children, just how many score points of growth are expected from how many months of age change. For example, a regression equation calculated for a group of children ranging in age from about three to five years may show their scores on a developmental test increase about 1.5 points for each one-month change in age. If all of these children were tested on the developmental score prior to their enrollment in special education services, one can be certain that this growth rate is not influenced by the special education program.

What remains, then, to assess the effect of the preschool program is to compare these children's gains over a period of, say, 10 months of program experience with gains now expected based on the 1.5 points for each month calculated in the regression equation, that is, 15 points over the 10 months. If this group of children averages a 20-point gain over the 10 months of preschool services, then it can be concluded that those services boosted their growth by five points.

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1. A.S. Bryk & H.I. Weisberg Value-added Analysis: A Dynamic Approach to the Estimation of Treatment Effects. *Journal of Educational Statistics*, *1* (2), 1976, 127-155. A.S. Bryk, J.F. Strenio & H.I. Weisberg. A Method for estimating Treatment Effects when Individuals are Growing. *Journal of Educational Statistics*, *5* (1), 1980, 5-34.

Other details of the analysis provide a way of tailoring the "expected" growth rate to fit different types of children since not all children grow at the same rate. This is accomplished in the regression analysis by including in the regression equation other variables which alter the relationship between age and pretest scores. Such variables which make a difference in growth rates may include sex, race, socioeconomic status, family size, level of need for services, or location of preschool services. (Location of services -- Head Start; Level 2 classrooms; and special intensive classes differentiated children according to age groups and severity of handicapping condition.) For example, with the Language-Impaired group, it was found that the points-per-month index differed depending upon the location of the preschool services. Thus, terms were added to the regression equation to represent the interaction of age with program location on the pretest scores.

The specifics steps in value-added analysis are summarized below. As noted in Chapter 4 of the report, these steps were conducted separately for the Language-Impaired, the Speech-Impaired, and the multihandicapped groups since these groups differed greatly in their handicapping conditions, age levels, and types of program services.

1. Determine which variables interact with age in the regression of pretest scores on age

   Each of the seven BDI domain scores were regressed on the following list of independent variables:

Age	
Sex	Sex by age
Race	Race by age
Severity of motor needs	Motor needs by age
Severity of speech needs	Speech needs by age
Socioeconomic status	SES by age
Family size	Family size by age

   Age in months were standardized for the pretest distribution. Due to missing data on the family size and SES variables, these sets of variables were run in equations separate from the other independent variables. All independent variables except age were reduced to categorical variables and represented in the analysis by using "effects coding."[2]

2. For each of the seven BDI scores, recalculate regression equations incorporating only those sets of variables whose age interaction terms are statistically significant at or beyond the .15 level of significance

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[2] J. Cohen and P. Cohen Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences. New York: Wiley, (1975), p. 190.

3. Calculate for each case a combined "aging coefficient" which represents the effects of age changes on that child's scores appropriately adjusted for the significant individual differences from Step 2

> The regression coefficient for age and any regression coefficients for significant interaction terms are summed algebraically. Note that the age interaction coefficients must first be multiplied by their respective main "effect coded" variables before being summed. Note also that regression coefficients from the main-effect terms are not used in this step since they convey no information related to age changes.

4. Determine how much each child has "aged" between the pre- and posttest, and multiply the combined aging coefficient from Step 3 by the age change to derive the number of raw score points "expected" from the maturation process alone

> Since age in months was standardized on the pretest distribution of scores, the number of months between pre- and posttest must be divided by the pretest standard deviation of age. Note that children were pretested and admitted to services on a continuous basis so that the pre- posttest interval varied greatly across the sample.

5. Subtract the points due to maturation from the pre-post raw gain score to derive the number of points change due to the special education program

6. Divide "program points" and "maturation points" by the number of months in the pre- posttest interval to translate gains into points per month

> Since children varied so much in their pre- posttest intervals, the points-per-month scale provides more meaningful comparisons among various subgroups in the analysis.